

Intensive Interaction as an intervention approach in children with autism spectrum disorder: a systematic review

Angelos Papadopoulos ^{1,2,*}, Ioannis Vogindroukas ^{3,4}, Angeliki Tsapara ¹, Louiza Voniati ⁵, Dionysios Tafiadis ⁶ and Panagiotis Plotas ^{1,7}

¹ Department of Speech and Language Therapy, School of Health Rehabilitation Sciences, University of Patras, Patras, Greece.

² General Children's Hospital of Patras "Karamandaneio", Patras, Greece.

³ School of Education, Nicosia University, Nicosia, Cyprus.

⁴ Department of Health Care and Social Work, New Bulgarian University, Sofia, Bulgaria.

⁵ Department of Health Sciences, Speech and Language Therapy, European University, Nicosia, Cyprus.

⁶ Department Speech and Language Therapy, School of Health Sciences, University of Patras, Patras, Greece.

⁷ Laboratory of Primary Health Care, School of Health Rehabilitation Sciences, University of Patras, Patras, Greece.

* Correspondence: angelospapadopoulos@gmail.com; Tel.: +30 6949983338

Received: 17 July 2023; **Accepted:** 3 November 2023; **Published:** 11 December 2023

Edited by: Elena Molchanova (American University of Central Asia, Kyrgyzstan)

Reviewed by: Klym Aitkulova (American University of Central Asia, Kyrgyzstan);

Shamoon Noushad (Malir University of Science and Technology, Pakistan)

<https://doi.org/10.31117/neuroscirn.v6i4.276>

ABSTRACT: As a neurodevelopmental condition, autism spectrum disorder (ASD) is characterised by pervasive social interaction and communication deficits. This review aimed to identify and synthesise the latest literature about the effectiveness of the Intensive Interaction approach in children with ASD. The review was conducted according to the PRISMA guidelines. The total number of children with ASD was 28, aged from 4 to 14 years old, with 27 males and only one female. The studies addressed intervention goals related to non-verbal and intentional communication, behavioural difficulties, joint attention, and parent-child interaction. The findings from the studies indicated that children with ASD had a positive outcome from the involvement in the Intensive Interaction approach. Regrettably, the constraints imposed by the methodology and design employed in the studies, coupled with the limited sample sizes (two of the studies consisted of a single case), preclude forming any definitive conclusions about the impacts of Intensive Interaction. However, the evidence is at least sufficient to support the assertions put forth by the authors. Despite the encouraging evidence of the effectiveness of the Intensive Interaction approach, multiple factors contribute as barriers to this issue, including the inherent challenges associated with conducting high-quality research that adheres to rigorous methodological standards.

Keywords: Intensive Interaction; Autism Spectrum Disorder; Children; Communication; Systematic Review

©2023 by Papadopoulos *et al.* for use and distribution according to the Creative Commons Attribution (CC BY-NC 4.0) license (<https://creativecommons.org/licenses/by-nc/4.0/>), which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original author and source are credited.

1.0 INTRODUCTION

As a neurodevelopmental condition, autism spectrum disorder (ASD) is characterised by pervasive deficits in

social interaction and communication ([American Psychiatric Association, 2013](#)). Moreover, rigid and/or repetitive behaviours or sensory concerns impact the

individual's functioning and development. Individuals with ASD experience symptoms with or without intellectual or language impairment ([American Psychiatric Association, 2013](#)). The latest updated report about ASD prevalence revealed an increased prevalence, as the overall ASD prevalence was 23.0 per 1,000 (one in 44) children aged eight years, and ASD was 4.2 times as prevalent among boys as among girls. Overall, ASD prevalence was similar across racial and ethnic groups, except American Indian/Alaska Native children had higher ASD prevalence than non-Hispanic White children (29.0 versus 21.2 per 1,000 children aged eight years) ([Christensen et al., 2019](#); [Maenner et al., 2021, 2023](#)).

Autism Spectrum Disorder (ASD) exhibits many symptoms and severity levels. Treatment primarily targets the core features of ASD, including social communication, interaction deficits, restricted behaviours, sensory issues, and challenging behaviours that impede the development of functional skills and independence ([Myers et al., 2007](#); [Will et al., 2018](#)). The main objectives of treatment are to reduce the core symptoms and related deficiencies, increase functional independence and quality of life, and reduce stress in the family ([Myers et al., 2007](#); [Papadopoulos et al., 2022, 2023](#); [Papadopoulos, 2016](#); [Papadopoulos et al., 2019](#)). The main characteristics of ASDs, such as impaired social reciprocity, communication difficulties, and a limited, repetitive behavioural repertoire, should be lessened by interventions ([Myers et al., 2007](#)).

Literature has documented intervention programs for children with ASD ([Myers et al., 2007](#)), and it has been noted that a range of strategies can help children with ASD improve their communication abilities, such as DTT, verbal behaviour, the natural language paradigm, pivotal response training, and milieu teaching. However, some empirical evidence also favours developmental-pragmatic approaches ([Myers et al., 2007](#)). Due to their social communication deficits, individuals with ASD typically benefit from treatment from a speech-language pathologist. However, traditional, low-intensity intervention is often ineffective for children with ASD ([Myers et al., 2007](#)).

Intensive Interaction was first created in the 1980s by Dave Hewett and Melanie Nind ([Hewett & Nind, 1988](#)). As mentioned in a study ([Firth, 2006](#)), the approach is based upon the theoretical framework of 'Augmented Mothering' proposed by psychologist Gary Ephraim in 1982 ([Ephraim, 1982](#)). Ephraim advocated for implementing naturalistic interactions in working with

individuals with learning disabilities, drawing upon the principles of 'infant-caregiver' interactional techniques. Moreover, Intensive Interaction techniques include on-task associated physical proximity, responsive eye contact and facial signalling, physical contact, vocal echoing, and behavioural mirroring ([Firth, 2006](#)).

Initially, the approach was utilised in an educational context to teach essential communication skills and promote social interaction, with documented reports of its efficacy in education. Furthermore, Intensive Interaction is applied in various professional fields and care settings, such as family units, social care organisations, and educational institutions, to embrace a particular approach ([Firth, 2009](#)). This approach is valuable for building connections and engaging in social interactions with individuals who may be distant or face challenges in socialising ([Firth, 2009](#)).

Although starting in the UK, the approach has become more widespread, with resources published across many countries ([Intensive Interaction Institute, 2022](#)). Intensive Interaction is recommended in the Royal College of Speech and Language Therapists, UK educational settings, the Welsh Assembly Government, and the Council for Curriculum, Examinations, Assessment, and Qualifications and Curriculum Authority ([McKim & Samuel, 2021](#)). Furthermore, the UK National Institute of Health Research has now designated funding a large cohort RCT study across 66+ schools in the UK over four years, looking at the efficacy of Intensive Interaction with children and young people with profound and multiple learning disabilities (PMLD) ([UK National Institute of Health Research, 2023](#)).

Intensive Interaction is a practical and social communication approach to interacting with individuals who experience challenges in communication and social interaction ([Firth, 2006](#)), and that may help individuals with ASD to overcome these barriers ([Berridge & Hutchinson, 2022](#)). Specifically, it is employed with individuals who have limited or no verbal language abilities, such as those diagnosed with profound and multiple intellectual disabilities or ASD ([Hutchinson & Bodicoat, 2015](#); [Nind & Hewett, 2001](#)). The approach incorporates pre-verbal communication strategies, such as responsive eye contact, facial expressions, vocal mirroring, and joint attention activities ([Hutchinson & Bodicoat, 2015](#); [Nind & Hewett, 2001](#)). The literature suggests that Intensive Interaction gained ground and recognition among health and educational services ([Hutchinson & Bodicoat, 2015](#)).

In 2015, a review study ([Hutchinson & Bodicoat, 2015](#)) reported conflicting applications between the social and educational aims of Intensive Interaction. However, as mentioned in the study ([Hutchinson & Bodicoat, 2015](#)), Firth formulated a comprehensive model that integrates these various perspectives ([Firth, 2009](#)). According to Firth's 'Dual Aspect Process Model,' the approach reveals observable processes at two different time intervals. Following the initial implementation of Intensive Interaction, there is a notable augmentation in social integration and interpersonal communication as a consequence of the inclusive reactions toward the individual's communicative actions ([Firth, 2009](#); [Hutchinson & Bodicoat, 2015](#)). In addition, positive outcomes in developing sociability and communication had been shown in implementing the approach to autism as early as 1996 ([Nind, 1996](#)).

Intensive Interaction has the potential to play a primary role in ASD intervention due to its association between challenges in communication skills and self-injurious behaviour ([Duncan et al., 1999](#); [Hutchinson & Bodicoat, 2015](#)). Moreover, repetitive behaviour may arise due to insufficient social engagement ([Hutchinson & Bodicoat, 2015](#); [Lee et al., 2007](#)). As the literature supports, implementing an intervention like Intensive Interaction that explicitly addresses social inclusion can mitigate self-injurious and repetitive behaviour ([Hutchinson & Bodicoat, 2015](#)).

To our knowledge, the published studies and review studies in this field are minimal ([Hutchinson & Bodicoat, 2015](#)), and many of them are usually case studies ([Argyropoulou & Papoudi, 2012](#); [Mourière & Hewett, 2021](#); [Mourière & Scott-Roberts, 2017](#)). This review aimed to identify and synthesise peer-reviewed publications on the latest literature about the Intensive Interaction approach in children with ASD, specifically, the impact and effectiveness of Intensive Interaction in the therapeutic management of these children.

2.0 METHODS

This systematic literature review was conducted according to the guidelines of the Preferred Reporting Items for Systematic Reviews and Meta-Analyses ([Figure 1](#)) ([Page et al., 2021](#)).

To be included in this review, studies had to (a) be published only in English and in a peer-reviewed journal; (b) be of a quantitative design; (c) include an ASD sample; (d) include therapeutic implementation of the Intensive Interaction, and (e) include only children. We searched Scopus, Medline (PubMed), and Google

Scholar. We included all records published before 5 June 2023 and met the eligibility criteria of this study. The lower bound limit for the publication date was 2016 to record the latest literature. We set this publication limit to cover the time from 2015 up to date because the latest review study about Intensive Interaction was published in 2015 ([Hutchinson & Bodicoat, 2015](#)).

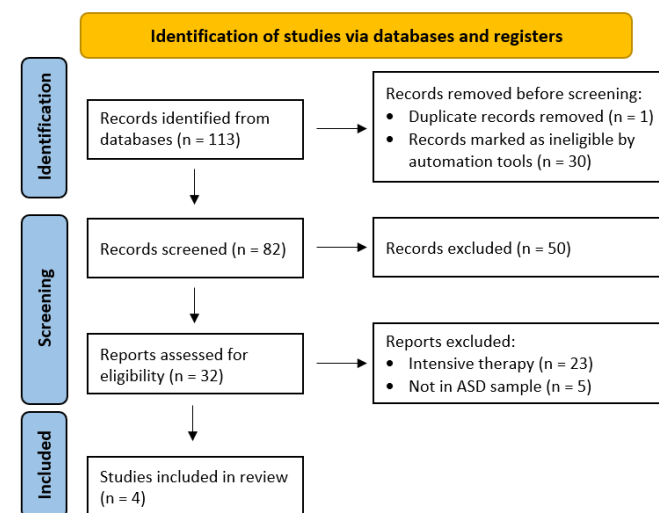


Figure 1. Flowchart of studies identification according to the PRISMA guidelines.

We conducted the database search to focus on autism spectrum disorder. We employed an advanced search method that included various search terms. The following search terms were included: TITLE-ABS-KEY (intensive AND Interaction AND autism) AND PUBYEAR > 2015 AND (LIMIT-TO (DOCTYPE, "ar") OR LIMIT-TO (DOCTYPE, "re")) AND (LIMIT-TO (LANGUAGE, "English")) AND (EXCLUDE (SUBJAREA, "ENGI") OR EXCLUDE (SUBJAREA, "BIOC") OR EXCLUDE (SUBJAREA, "COMP") OR EXCLUDE (SUBJAREA, "CHEM") OR EXCLUDE (SUBJAREA, "ARTS") OR EXCLUDE (SUBJAREA, "MATH") OR EXCLUDE (SUBJAREA, "PHYS") OR EXCLUDE (SUBJAREA, "CENG") OR EXCLUDE (SUBJAREA, "ENVI") OR EXCLUDE (SUBJAREA, "AGRI") OR EXCLUDE (SUBJAREA, "IMMU") OR EXCLUDE (SUBJAREA, "PHAR") OR EXCLUDE (SUBJAREA, "VETE")).

We used database filters to limit the results to peer-reviewed publications written in English. The first and the second author independently searched each database with total agreement for search results. The search resulted in the identification of 4 articles. The studies conducted regarding Intensive Interaction and

ASD were limited. The articles met all eligibility criteria and were included in the review.

3.0 SUMMARY OF STUDIES

The specific criteria of the literature search led to a narrow study, as reported in **Table 1**. The findings from the four studies indicated that children with ASD had a positive outcome from the involvement in the Intensive Interaction approach.

Recently, a study conducted in Ahvaz, Iran ([Karimi et al., 2020](#)), which could not be included in the study due to the inclusion criteria (only in the English language), also showed a positive effect of Intensive Interaction in children with autism. The population of this study included 22 children with autism spectrum disorder who were randomly assigned to experimental and control groups with pre-and post-tests. The study's results of multivariate covariance analysis showed that the Intensive Interaction method was effective on the social interaction dimension ($p < 0.001$), and according to the authors, the method of Interactive Interaction is effective on the social interaction dimension.

The above study reinforces the belief that Intensive Interaction can provide the involved therapists and educators with a tool to enhance the intervention of autistic children. To better understand the importance of socialising in autism, it is vital to refer to "The double empathy problem theory" ([Milton, 2012](#); [Milton et al., 2022](#)).

This theory proposes that many of the difficulties autistic individuals face when socialising with non-autistic individuals are due, in part, to a lack of mutual understanding between the two groups, meaning that most autistic people struggle to understand and empathise with non-autistic people, whereas most non-autistic people also struggle to understand and empathise with autistic people ([Milton, 2012](#); [Milton et al., 2022](#)).

In addition, another study in 2022 revealed the effectiveness of an Intensive Interaction Intervention program based on a sensory approach to challenging behaviours of low-function children with ASD at rehabilitation centres in Karaj, Iran ([Rezayi, 2022](#)). In recent years, more studies ([Karimi et al., 2020](#); [Rezayi, 2022](#)) combined the Intensive Interaction approach with some other approaches (e.g., sensory Positive Behavioural Support framework), maximising the positive result in the intervention for individuals with ASD.

Two of all four studies were conducted as single cases ([Mourière & Hewett, 2021](#); [Mourière & Scott-Roberts, 2017](#)). The total number of children with ASD was 28. Regarding the gender of the children with ASD, most were males ($n = 27$), and females were only 1 case. Regarding the assessment tools, two studies reported information about the diagnostic process using the DSM-IV-TR criteria ([American Psychiatric Association, 2000](#)). The dimensions targeted as intervention goals include non-verbal and intentional communication, behavioural issues, joint attention, and parent-child connection. Moreover, two studies conducted direct intervention on the children, one performed indirect intervention by consulting the parents of the children about the Intensive Interaction approach, and one recorded and analysed the data extracted from interviewed parents of children involved in Intensive Interaction approaches.

Specifically, in the study ([Tee & Reed, 2016](#)) that targeted behavioural issues, results revealed that Intensive Interaction might be of limited utility for reducing problem behaviours generally of pupils with ASD, but that the approach indicated that it could be effective with less behaviorally challenging pupils and that levels of parent distress may reduce its impact. The literature suggests Intensive Interaction could positively support behavioural challenges in children and adults with ASD ([McKim & Samuel, 2021](#); [Rezayi, 2022](#)).

Furthermore, findings in verbal and non-verbal communication studies also revealed positive outcomes ([Berridge & Hutchinson, 2022](#); [Mourière & Hewett, 2021](#); [Mourière & Scott-Roberts, 2017](#)). Immediate and significant improvements can be made to the person's social and communication experience in the Intensive Interaction combined with the Positive Behavioural Support framework ([McKim & Samuel, 2021](#)). The intervention period ranged from 3 months at least to 5 years of Intensive Interaction therapy approach (direct and indirect).

Specifically, in one study ([Mourière & Hewett, 2021](#)), the approach was designed to consult the parents of children with ASD. Over recent years, the evidence through literature supports that indirect practices have had an increasing use among parents that aim to improve parent-child interaction and the communication environment in the family. A study found that over 80% of speech and language therapists (SLTs) reported indirect therapy through parents, and 45% of the SLTs reported using parent-child interaction training ([Law et al., 2019](#)).

In addition, a recent study in May 2023 indicated that a parent-directed intervention model could be as effective as child-directed intervention by SLTs for children's language development and functional communication ([Zwitserlood-Nijenhuis et al., 2023](#)).

Furthermore, implementing an indirect intervention approach in children with ASD resulted in enhanced language measures ([Ingersoll et al., 2016](#); [Ingersoll & Dvortcsak, 2006](#)). The long-term effect of indirect intervention is limited ([Thunberg, 2013](#)). Clinicians and researchers hypothesise that there probably is a need to do follow-ups and/or provide booster interventions to maintain the intervention effects over time. There are also indications that indirect intervention's impact on the child's development seems to be further enhanced with direct intervention to the child ([Thunberg, 2013](#)).

A study by Tee and Reed ([2017](#)) included a control group and a direct comparison between children receiving the Intensive Interaction approach and those not. The study's findings regarding the comparison with the control group revealed that while the Intensive Interaction did demonstrate a numerically greater reduction in child behaviour problems than the control sample, this difference was not statistically reliable. This result raises the need for more studies to be conducted in the future.

4.0 CONCLUSIONS

This review aimed to identify and synthesise peer-reviewed publications on the latest literature about the Intensive Interaction approach in children with ASD, specifically, the impact and effectiveness of Intensive Interaction in the therapeutic management of these children.

This study had limitations because it focused solely on the Intensive Interaction approach regarding communication, social interaction, and behavioural disorders. Additionally, the sparse amount of studies about Intensive Interaction in the literature demonstrated the necessity for additional pertinent studies to be planned and carried out about the intensive interaction strategy in ASD children with larger samples and control groups. Regrettably, the constraints imposed by the methodology and design employed in the studies, coupled with the limited sample sizes (two of the studies were single cases), preclude forming any definitive conclusions about the impacts of Intensive Interaction.

However, the evidence is at least sufficient to support the assertions put forth by the authors. Despite the encouraging evidence of the effectiveness of the Intensive Interaction approach, multiple factors contribute as barriers to this issue, including the inherent challenges associated with conducting high-quality research that adheres to rigorous methodological standards. The restrictions mentioned above lead to the conclusion that future studies should involve more participants, include a control group, use a stricter methodology, and report more details about their methods (to be replicated) to allow researchers and experts to conduct a meta-analysis.

Author Contributions: A.P., I.V., and P.P. conceptualised the study. A.P., A.T. and L.V. performed the literature search. A.P., D.T. and P.P. analysed the data. A.P., I.V., A.T. and D.T. wrote and edited the review. I.V. and P.P. supervised the study.

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

Table 1. Characteristics of the studies included.

Study	Control Group	No. of Intensive Interaction group with ASD	No. of Male / Female	Mean Age [Range]	Assessment Tools	Targeted Dimensions / Therapy duration	Findings
(Tee & Reed, 2016)	Yes	20	20/0	9.90	- DSM-IV-TR criteria (American Psychiatric Association, 2000), - Social Communication Questionnaire (Rutter et al., 2003), - Leiter International Performance Scale-Revised (Roid & Miller, 1997), - Language ability, - British Abilities Reading Achievement Scale (Elliott et al., 1996)	Behavioural problems / 1–2 hours, five days a week for six months	It is more effective for pupils with less challenging behaviour. Specifically, the data suggest that Intensive Interaction may be of limited utility for reducing problem behaviours of pupils with ASD but that the approach could be effective with less behaviorally challenging pupils and that levels of parent distress may reduce its impact. (This difference was not statistically reliable, only numerical)
(Mourière & Scott-Roberts, 2017)	No	1	1/0	10	Fundamentals of Communication Assessment and Learning based on (Hertenstein et al., 2006; Neaum, 2010; Ockelford, 2013)	Joint attention and Intentional communication / 12 weeks	The results of this research support the effectiveness of Intensive Interaction with an individual at a pre-verbal level of communication by developing his communicative skills.
(Mourière & Hewett, 2021)	No	1	1/0	14	DSM-IV-TR (American Psychiatric Association, 2000)	Non-verbal communication/indirect therapy by consultation sessions via Skype for 1 hour/week. Over six months, the family received 14 hours of consultation, an average of 2 consultations a month.	Intensive Interaction creates frequent opportunities for a person to participate in face-to-face interactions and consequently allows for the gradual development of non-verbal communication.
(Berridge & Hutchinson, 2022)	No	6	5/1	[4 – 11]	- Indirect measures - Interviewed parents, Interviews were audio recorded	The Connection feeling - some ways in which connection was described, such as increased eye contact and proximity / 5 months to 5 years range among children with ASD	Intensive Interaction was found to help some mothers feel connected with their children; they appeared to indicate that accessing timely support with Intensive Interaction was beneficial. Intensive Interaction was also perceived to challenge assumptions and stigma, but these factors were also perceived as potential barriers to using the approach.

References

- American Psychiatric Association. (2000). *Diagnostic criteria from DSM-IV-TR*. Elsevier España, Spain.
- American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders (DSM-5)*. American Psychiatric Publishing, United States.
- Argyropoulou, Z., & Papoudi, D. (2012). The training of a child with autism in a Greek preschool inclusive class through intensive interaction: a case study. *European Journal of Special Needs Education*, 27(1), 99–114. <https://doi.org/10.1080/08856257.2011.640489>
- Berridge, S., & Hutchinson, N. (2022). Mothers' experience of Intensive Interaction. *Journal of Intellectual Disabilities*, 26(2), 391–406. <https://doi.org/10.1177/1744629521995374>
- Christensen, D. L., Maenner, M. J., Bilder, D., Constantino, J. N., Daniels, J., Durkin, M. S., Fitzgerald, R. T., Kurzius-Spencer, M., Pettygrove, S. D., Robinson, C., Shenouda, J., White, T., Zahorodny, W., Pazol, K., and Dietz, P. (2019). Prevalence and characteristics of autism spectrum disorder among children aged 4 years—early autism and developmental disabilities monitoring network, seven sites, United States, 2010, 2012, and 2014. *Morbidity and Mortality Weekly Report Surveillance Summaries*, 68(2), 1–19. <https://doi.org/10.15585/mmwr.ss6802>
- Duncan, D., Matson, J. L., Bamburg, J. W., Cherry, K. E., & Buckley, T. (1999). The relationship of self-injurious behavior and aggression to social skills in persons with severe and profound learning disability. *Research in Developmental Disabilities*, 20(6), 441–448. [https://doi.org/10.1016/s0891-4222\(99\)00024-4](https://doi.org/10.1016/s0891-4222(99)00024-4)
- Elliott, C. D., Smith, P., & McCulloch, K. (1996). *British ability scales (BAS II): Full age range*. NFER-Nelson, United Kingdom.
- Ephraim, G. W. (1982). *Developmental process in mental handicap: a generative structure approach*. School of Social Sciences Theses, United Kingdom.
- Firth, G. (2006). Intensive Interaction: a research review. *Mental Health and Learning Disabilities Research and Practice*, 3, 53–63. <https://doi.org/10.5920/mhldrp.2006.3153>
- Firth, G. (2009). A dual aspect process model of intensive interaction. *British Journal of Learning Disabilities*, 37(1), 43–49. <https://doi.org/10.1111/j.1468-3156.2008.00505.x>
- Hertenstein, M. J., Keltner, D., App, B., Bulleit, B. A., & Jaskolka, A. R. (2006). Touch communicates distinct emotions. *Emotion*, 6(3), 528–533. <https://doi.org/10.1037/1528-3542.6.3.528>
- Hewett, D., & Nind, M. (1988). *Developing an interactive curriculum for pupils with severe and complex learning difficulties. Interactive Approaches to the Education of Children with Severe Learning Difficulties*. Westhill College, United States.
- Hutchinson, N., & Bodicoat, A. (2015). The effectiveness of Intensive Interaction, a systematic literature review. *Journal of Applied Research in Intellectual Disabilities*, 28(6), 437–454. <https://doi.org/10.1111/jar.12138>
- Ingersoll, B., & Dvortcsak, A. (2006). Including parent training in the early childhood special education curriculum for children with autism spectrum disorders. *Topics in Early Childhood Special Education*, 26(3), 179–187. <https://doi.org/10.1177/02711214060260030501>
- Ingersoll, B., Wainer, A. L., Berger, N. I., Pickard, K. E., & Bonter, N. (2016). Comparison of a self-directed and therapist-assisted telehealth parent-mediated intervention for children with ASD: A pilot RCT. *Journal of Autism and Developmental Disorders*, 46(7), 2275–2284. <https://doi.org/10.1007/s10803-016-2755-z>
- Intensive Interaction Institute. (2022, June 20). *Intensive Interaction Virtual Conference "Journeys into Intensive Interaction"*. https://www.intensiveinteraction.org/whats-on/conferences/conference-2022/?fbclid=IwAR2wjNI7aIDQG7_DSo76c0QIki3dNxRDW-kHlVLwDlp75_e0NcY6sNyVwk
- Karimi, S., Asgari, P., & Hevdari, A. (2020). The effect of intensive interaction intervention on the social interactions and communication of children with autism spectrum disorder. *Jundishapur Scientific Medical Journal*, 18(6), 603–614. <https://doi.org/10.22118/jsmj.2020.206834.1885>
- Law, J., Levickis, P., De Los Reyes Rodríguez Ortiz, I., Matić, A., Lyons, R., Messarra, C., Hreich, E. K., & Stankova, M. (2019). Working with the parents and families of children with developmental language disorders: An international perspective. *Journal of Communication Disorders*, 82, 105922. <https://doi.org/10.1016/j.jcomdis.2019.105922>
- Lee, S., Odom, S. L., & Loftin, R. (2007). Social engagement with peers and stereotypic behavior of children with autism. *Journal of Positive Behavior Interventions*, 9(2), 67–79. <https://doi.org/10.1177/10983007070090020401>

- Maenner, M. J., Shaw, K. A., Bakian, A. V., Bilder, D. A., Durkin, M. S., Esler, A., Furnier, S. M., Hallas, L., Hall-Lande, J., Hudson, A., Hughes, M. M., Patrick, M., Pierce, K., Poynter, J. N., Salinas, A., Shenouda, J., Vehorn, A., Warren, Z., Constantino, J. N., DiRenzo, M., Fitzgerald, R. T., Grzybowski, A., Spivey, M. H., Pettygrove, S., Zahorodny, W., Ali, A., Andrews, J. G., Baroud, T., Gutierrez, J., Hewitt, A., Lee, L. C., Lopez, M., Mancilla, K. C., McArthur, D., Schwenk, Y. D., Washington, A., Williams, S., & Cogswell, M. E. (2021). Prevalence and characteristics of autism spectrum disorder among children aged 8 years—autism and developmental disabilities monitoring network, 11 sites, United States, 2018. *Morbidity and Mortality Weekly Report Surveillance Summaries*, 70(11), 1–16. <https://doi.org/10.15585/mmwr.ss7011a1>
- Maenner, M. J., Warren, Z., Williams, A. R., Amoakohene, E., Bakian, A. V., Bilder, D. A., Durkin, M. S., Fitzgerald, R. T., Furnier, S. M., Hughes, M. M., Ladd-Acosta, C. M., McArthur, D., Pas, E. T., Salinas, A., Vehorn, A., Williams, S., Esler, A., Grzybowski, A., Hall-Lande, J., Nguyen, R. H. N., Pierce, K., Zahorodny, W., Hudson, A., Hallas, L., Mancilla, K. C., Patrick, M., Shenouda, J., Sidwell, K., DiRienzo, M., Gutierrez, J., Spivey, M. H., Lopez, M., Pettygrove, S., Schwenk, Y. D., Washington, A., & Shaw, K. A. (2023). Prevalence and characteristics of autism spectrum disorder among children aged 8 years—autism and developmental disabilities monitoring network, 11 sites, United States, 2020. *Morbidity and Mortality Weekly Report Surveillance Summaries*, 72(2), 1–14. <https://doi.org/10.15585/mmwr.ss7202a1>
- McKim, J., & Samuel, J. (2021). The use of Intensive Interaction within a positive behavioural support framework. *British Journal of Learning Disabilities*, 49(2), 129–137. <https://doi.org/10.1111/bld.12367>
- Milton, D. E. M. (2012). On the ontological status of autism: the "double empathy problem." *Disability and Society*, 27(6), 883–887. <https://doi.org/10.1080/09687599.2012.710008>
- Milton, D., Gurbuz, E., & López, B. (2022). The 'double empathy problem': Ten years on. *Autism*, 26(8), 1901–1903. <https://doi.org/10.1177/13623613221129123>
- Mourière, A., & Hewett, D. (2021). Autism, Intensive Interaction and the development of non-verbal communication in a teenager diagnosed with PDD-NOS: a case study. *Support for Learning*, 36(3), 400–420. <https://doi.org/10.1111/1467-9604.12370>
- Mourière, A., & Scott-Roberts, S. (2017). Measuring the impact of Intensive Interaction on joint attention and intentional communication using the FOCAL wheels. *Good Autism Practice*, 18(1), 34–45. <https://www.uffculme.org.uk/attachments/download.asp?file=158&type=pdf>
- Myers, S. M., & Johnson, C. P. (2007). Management of children with autism spectrum disorders. *Pediatrics*, 120(5), 1162–1182. <https://doi.org/10.1542/peds.2007-2362>
- Neaum, S. (2010). *Child development for early childhood studies*. SAGE Publishing, United States.
- Nind, M. (1996). Efficacy of Intensive Interaction: developing sociability and communication in people with severe and complex learning difficulties using an approach based on caregiver - infant interaction. *European Journal of Special Needs Education*, 11(1), 48–66. <https://doi.org/10.1080/0885625960110104>
- Nind, M., & Hewett, D. (2001). *A practical guide to intensive interaction*. British Institute of Learning Disabilities, United Kingdom.
- Ockelford, A. (2013). *Music, language and autism: Exceptional Strategies for Exceptional Minds*. Jessica Kingsley Publishers, United Kingdom.
- Page, M. J., McKenzie, J. E., Bossuyt, P. M., Boutron, I., Hoffmann, T. C., Mulrow, C. D., Shamseer, L., Tetzlaff, J. M., Akl, E. A., Brennan, S. E., Chou, R., Glanville, J., Grimshaw, J. M., Hróbjartsson, A., Lalu, M. M., Li, T., Loder, E. W., Mayo-Wilson, E., McDonald, S., McGuinness, L. A., Stewart, L. A., Thomas, J., Tricco, A. C., Welch, V. A., Whiting, P., & Moher, D. (2021). The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. *BMJ*, 372, n71. <https://doi.org/10.1136/bmj.n71>
- Papadopoulos, A., Siafaka, V., Tsapara, A., Tafiadis, D., Kotsis, K., Skapinakis, P., & Tzoufi, M. (2023). Measuring parental stress, illness perceptions, coping and quality of life in families of children newly diagnosed with autism spectrum disorder. *British Journal of Psychiatry Open*, 9(3), e84. <https://doi.org/10.1192/bjo.2023.55>
- Papadopoulos, A., Tafiadis, D., Tsapara, A., Skapinakis, P., Tzoufi, M., & Siafaka, V. (2022). Validation of the Greek version of the Affiliate Stigma Scale among mothers of children with autism spectrum disorder. *British Journal of Psychiatry Open*, 8(1), e30. <https://doi.org/10.1192/bjo.2021.1083>
- Papadopoulos, C. (2016, March 21). *Self-stigma among carers of autistic people*. University of Bedfordshire, England.

- Papadopoulos, C., Lodder, A., Constantinou, G., & Randhawa, G. (2019). Systematic review of the relationship between autism stigma and informal caregiver mental health. *Journal of Autism and Developmental Disorders*, 49(4), 1665–1685. <https://doi.org/10.1007/s10803-018-3835-z>
- Rezayi, S. (2022). The effectiveness of an intensive interaction intervention program based on sensory approach on challenging behaviors of children with autism disorder. *Journal of Exceptional Children*, 22(3), 111–122. https://joec.ir/browse.php?a_id=1539&sid=1&slc_lang=en
- Roid, G. H., & Miller, L. J. (1997). *Leiter international performance scale-revised (Leiter-R)*. Wood Dale, United States.
- Rutter, M., Bailey, A. and Lord, C. (2003) *The Social Communication Questionnaire: Manual*. Western Psychological Services, United States.
- Tee, A., & Reed, P. (2016). Controlled study of the impact on child behaviour problems of intensive interaction for children with ASD. *Journal of Research in Special Educational Needs*, 17(3), 179–186. <https://doi.org/10.1111/1471-3802.12376>
- Thunberg, G. (2013). Early communication intervention for children with autism spectrum disorders. *Recent Advances in Autism Spectrum Disorders*, 1, 54881. <https://doi.org/10.5772/54881>
- UK National Institute of Health Research. (2023). *Intensive Interaction for Children and Young People with profound and multiple learning disabilities*. The INTERACT Trial. <https://www.interacttrial.com/the-trial>
- Will, M. N., Currans, K., Smith, J., Weber, S., Duncan, A., Burton, J., Kroeger-Geoppinger, K., Miller, V., Stone, M., Mays, L., Luebrecht, A., Heeman, A., Erickson, C., & Anixt, J. (2018). Evidenced-based interventions for children with autism spectrum disorder. *Current Problems in Pediatric and Adolescent Health Care*, 48(10), 234–249. <https://doi.org/10.1016/j.cppeds.2018.08.014>
- Zwitsersloot-Nijenhuis, M. A., Wiefferink, C. H., & Gerrits, E. (2023). A randomised study of parent- versus child-directed intervention for Dutch toddlers with DLD. *International Journal of Language & Communication Disorders*, 58(5), 1768–1782. <https://doi.org/10.1111/1460-6984.12901>