



Πρόγραμμα Μεταπτυχιακών Σπουδών Εξειδίκευσης
του Τμήματος Ελληνικής Φιλολογίας του Δημοκριτείου Πανεπιστημίου Θράκης
σε συνεργασία με το
ΕΚΕΦΕ Δημόκριτος – Ινστιτούτο Πληροφορικής και Επικοινωνιών
με τίτλο: «Εξειδίκευση στις Τ.Π.Ε. και Ειδική Αγωγή – Ψυχοπαιδαγωγική της
ένταξης»



ΠΡΟΓΡΑΜΜΑΤΑ ΠΑΡΕΜΒΑΣΗΣ ΜΕ ΚΟΙΝΩΝΙΚΑ ΡΟΜΠΟΤ ΓΙΑ ΤΗΝ ΚΟΙΝΩΝΙΚΟΣΥΝΑΙΣΘΗΜΑΤΙΚΗ ΕΚΠΑΙΔΕΥΣΗ ΤΩΝ ΑΤΟΜΩΝ ΜΕ ΑΥΤΙΣΜΟ

INTERVENTION PROGRAMS USING SOCIAL ROBOTS FOR THE SOCIO- EMOTIONAL EDUCATION OF PEOPLE WITH AUTISM

της

Δροσοπούλου Σωτηρίας

Μεταπτυχιακή διατριβή που υποβάλλεται
στην τριμελή επιτροπή για την απόκτηση του μεταπτυχιακού τίτλου του
Πρόγραμμα Μεταπτυχιακών Σπουδών Εξειδίκευσης
του Τ.Ε.Φ.-Δ.Π.Θ. σε συνεργασία με το Ε.Κ.Ε.Φ.Ε. Δημόκριτος – Ινστιτούτο
Πληροφορικής και Επικοινωνιών
με τίτλο: «Εξειδίκευση στις Τ.Π.Ε. και Ειδική Αγωγή – Ψυχοπαιδαγωγική της
ένταξης»

Εγκεκριμένο από την τριμελή επιτροπή:

- 1η Επιβλέπουσα: Σταθοπούλου Αγάθη,
ΕΔΙΠ σχολή Δημόσιας & Κοινωνικής Υγείας Πανεπιστήμιο
Δυτικής Αττικής (ΠΑΔΑ)
- 2η Επιβλέπουσα: Συριοπούλου-Δελλή Χριστίνα, Καθηγήτρια Πανεπιστήμιο
Μακεδονίας (ΠΑΜΑΚ)
- 3η Επιβλέπουσα: Δρ. Δόση Ιφιγένεια,
Διδάσκουσα βάσει του ΠΔ 407/80, Τ.Ε.Φ-ΔΠΘ

Κομοτηνή

2022

Περίληψη

Η παρούσα μεταπτυχιακή εργασία μελετάει την παρέμβαση των κοινωνικών ρομπότ στα παιδιά με διάχυτες αναπτυξιακές διαταραχές στο φάσμα του Αυτισμού. Το μεγαλύτερο έλλειμμα των παιδιών αυτών εντοπίζεται στις κοινωνικό-συναισθηματικές δεξιότητες τους. Σε αυτό το έλλειμμα στοχεύουν και οι βοηθοί ρομπότ για να μπορέσουν να διαγνώσουν, αναπτύξουν και να βελτιώσουν τόσο τα συναισθήματα όσο και τις κοινωνικές δεξιότητες. Τα τελευταία χρόνια τα ρομπότ βοηθοί αναπτύσσονται και εξελίσσονται συνεχώς. Τα ρομπότ αυτά μπορεί να είναι είτε ανθρωποειδή είτε να έχουν τη μορφή κάποιου ζώου. Οι έρευνες κυρίως ασχολούνται με δεξιότητες οι οποίες έχουν να κάνουν με την βλεμματική επαφή, το άγγιγμα και τη μίμηση. Από τις ερευνητικές μελέτες διαπιστώθηκε ότι τα άτομα φαίνεται να ανταποκρίνονται θετικά στην αλληλεπίδραση τους με τα κοινωνικά ρομπότ. Ξεκλειδώνουν δεξιότητες και αισθήματα ευκολότερα, καθώς τα κοινωνικά ρομπότ σαν παρεμβατικά εργαλεία παρατηρήθηκε ότι δεν αφήνουν αυτές τις δεξιότητες να φθίνουν.

Λέξεις κλειδιά: Αυτισμός, Διάχυτες Αναπτυξιακές Διαταραχές, κοινωνικά ρομπότ, ΤΠΕ, DSM V, κοινωνικό-συναισθηματική ανάπτυξη ατόμων με αυτισμό, παρέμβαση στον αυτισμό με κοινωνικά ρομπότ

ΒΙΒΛΙΟΓΡΑΦΙΑ

- American Psychiatric Association. (2013). *Pervasive developmental disorders*. In: *Diagnostic and Statistical Manual of Mental Disorders. 5th ed.-text revision (DSM-5)*. Washington: DC: American Psychiatric Association;.
- Anzalone, S., Tilmont , E., Boucenna, S., Xavier, J., Jouen, A., & Bodeau, N. (2014). How children with autism spectrum disorder behave and explore the 4-dimensional (spatial 3D+ time) environment during a joint attention induction task with a robot. *Research in Autism Spectrum Disorders*(8), pp. 814– 826. doi:doi:10.1016/j.rasd.2014.03.00
- Baio, J., Wiggins, L., Christensen , D., Maenner, M., Daniels, J., Warren, Z., & Dowling, N. (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*, pp. 67(6), 1-23. doi:10.15585/mmwr.ss6706a1.
- Bandrés, S., Toledo, S., Orús, M., & Baldassarri, S. (2021). The potential of technology in measuring the development of social skills in children with ASD: An analysis from physiological parameters. [La potencialidad de la tecnología en la medición del desarrollo de habilidades sociales en niños con TEA: Un análisis. *Revista De Investigacion Educativa*(39(2)), σσ. 445-462. doi:doi:10.6018/RIE.430891
- Bekele, E., Crittendon, J., Swanson, A., Sarkar, N., & Warren, Z. (2013). Pilot clinical application of an adaptive robotic system for young children with autism. . *Autism*(18), σσ. 598– 608. doi:doi: 10.1177/1362361313479454
- Block, A., & Kuchenbecker, K. (2018). Emotionally supporting humans through robot hugs. *International Conference on Human-Robot Interaction*, σσ. 293-294. doi:doi:10.1145/3173386.3176905

- Burns, R., Seifi, H., Lee, H., & Kuchenbecker, K. (2021). Getting in touch with children with autism: Specialist guidelines for a touch-perceiving robot . *Paladyn*(12(1)), σσ. 115-135. doi:doi:10.1515/pjbr-2021-0010
- Canitano , R., & Scandurra, V. (2011). Psychopharmacology in autism: an update. *Progress in Neuro-Psychopharmacology and Biological Psychiatry*, σσ. 35(1), 18-28.
- Cascio, C., Moana-Filho, E., Guest, S., Nebe, M., Weisner, J., Baranek, G., & Essick, G. (2012). Perceptual and neural response to affective tactile texture stimulation in adults with autism spectrum disorders. *Autism Research*(5(4)), pp. 231-244. doi:doi:10.1002/aur.1224
- Charlop, M., Schreibman, L., & Kurtz, P. (1991). Childhood autism. In T. R. Kratochwill & R. J. Morris (Eds.), *The practice of child therapy* . *Elmsford*, σσ. pp. 257–297.
- Charman, T. (2008). Autism spectrum disorders . *Psychiatry*(7(8)), σσ. 331-334. doi:doi:10.1016/j.mppsy.2008.05.015
- Chevallier, C., Kohls, G., Troiani, V., Brodtkin, E., & Schultz, R. (2012). The social motivation theory of autism. *Trends in Cognitive Sciences*(16(4)), σσ. 231-239. doi:doi:10.1016/j.tics.2012.02.007
- Chung, Y.-h. (2020). Robot-Mediated Social Skill Intervention Programme for Children with Autism Spectrum Disorder: An ABA Time-Series Study. *International Journal of Social Robotics* (13), σσ. 1095–1107. doi:https://doi.org/10.1007/s12369-020-00699-w
- Damm, O., Malchus, K., Jaecks, P., Krach, S., Paulus, F., Naber, M., & Wrede, B. (2013, August). Different gaze behavior in human-robot interaction in Asperger's syndrome: An eye-tracking study. In *IEEE RO-MAN*, pp. (pp. 368– 369).
- Delli, K., Haacke, E., Kroese, F., Pollard, R., Ihrler, S., Van Der Vegt, B., & Spijkervet, F. (2016). Towards personalised treatment in primary sjögren's syndrome: Baseline parotid histopathology predicts responsiveness to rituximab treatment. *Annals of*

- the Rheumatic Diseases*(75(11)), pp. 1933-1938. doi:doi:10.1136/annrheumdis-2015-208304
- Denham, S., McKinley, M., Couchoud, E., & Holt, R. (1990). Emotional and behavioral predictors of peer status in young preschoolers. *Child Development*(61), σσ. 1145–1152.
- Dennis, M., Lockyer, L., & Lazenby, A. (2000). How high-functioning children with autism understand real and deceptive emotion . *Autism*(4(4)), σσ. 370-381. doi:doi:10.1177/1362361300004004003
- Duquette, A., Michaud, F., & Mercier, H. (2008). Exploring the use of a mobile robot as an imitation agent with children with low-functioning autism. *Autonomous Robots*(24), σσ. 147– 157. doi:doi: 10.1007/s10514-007-9056-5
- Feil-Seifer, D., & Matari´, M. (2005, June–1 July 28). Defining Socially Assistive Robotics. *In Proceedings of the IEEE 9th International Conference on Rehabilitation Robotics* , σσ. pp. 465–468.
- Feinstein, A. (2010). A history of autism: Conversations with the pioneers. *A history of autism: Conversations with the pioneers*, σ. doi:10.1002/9781444325461.
- Fredrickson, B. (2001). The role of positive emotions in positive psychology: The broaden-and-build theory of positive emotions. *American Psychologist*(56(3)), σσ. 218-226. doi: doi:10.1037/0003-066X.56.3.218
- Grandin, T. (2013). My experience with visual thinking and sensory oversensitivity: The need for research on sensory problems. *Development and brain systems in autism* , σσ. (pp. 3-12). doi:doi:10.4324/9780203073353
- Green, V., Pituch, K., Itchon, J., Choi, A., O'Reilly, M., & Sigafoos, J. (2006). Internet survey of treatments used by parents of children with autism. *Research in Developmental Disabilities*(27(1)), pp. 70-84. doi: doi:10.1016/j.ridd.2004.12.002

- Grossman, E., & Blake, R. (2001). Brain activity evoked by inverted and imagined biological motion . *Vision Research*(41(10-11)), σσ. 1475-1482. doi:doi:10.1016/S0042-6989(00)00317-5
- Harms, M., Martin, A., & Wallace, G. (2010). Facial emotion recognition in autism spectrum disorders: A review of behavioral and neuroimaging studies . *Neuropsychology Review*(20(3)), σσ. 290-322. doi:doi:10.1007/s11065-010-9138-6
- Hess, L. (2006). I would like to play but i don't know how: A case study of pretend play in autism. *Child Language Teaching and Therapy*(22(1)), σσ. 97-116. doi:doi:10.1191/0265659006ct299oa
- Hill, E. (2004). Evaluating the theory of executive dysfunction in autism. *Developmental Review*(24(2)), σσ. 189–233. doi:doi:10.1016/j.dr.2004.01.001
- Hodgetts, S., Magill-Evans, J., & Misiaszek, J. (2011). Weighted vests, stereotyped behaviors and arousal in children with autism . *Journal of Autism and Developmental Disorders*(41(6)), σσ. 805-814. doi:doi:10.1007/s10803-010-1104-x
- Huijnen, C., Verreussel-Willen, H., Lexis, , M., & de Witte, L. (2021). Robot KASPAR as mediator in making contact with children with autism: A pilot study. *International Journal of Social Robotics*(13(2)), σσ. 237-249. doi: doi:10.1007/s12369-020-00633-0
- Ingersoll, B., & Schreibman, L. (2006). Teaching reciprocal imitation skills to young children with autism using a naturalistic behavioral approach: Effects on language, pretendplay, and joint attention. *Journal of autism and developmental disorders*(36(4)), σ. 487.
- Jiménez-Muñoz, L., Peñuelas-Calvo, I., Calvo-River, P., Díaz-Oliván, I., Moreno, M., Baca-García, E., & Porras-Segovia, A. (2022). Video games for the treatment of autism spectrum disorder: A systematic review. *Journal of Autism and Developmental Disorders*(52(1)), pp. 169-188. doi:doi:10.1007/s10803-021-04934-9

- Kasari, C., Chamberlain, B., & Bauminger, N. (2001). Social emotions and social relationships: Can children with autism compensate? In J. A. Burack, T. Charman, N. Yirmiya, & P. R. Zelazo (Eds.). *The development of autism: Perspectives from theory and research* , σσ. pp. 309–323.
- Kelly, M. P., Alireza, I., Busch, H., Al-Attrash, M., Ainsleigh, S., & Bhuptani, N. (2016). An overview of autism and applied behavior analysis in the gulf cooperation council in the middle east. *Review Journal of Autism and Developmental Disorders*(3(2)), pp. 154-164. doi:doi:10.1007/s40489-016-0073-1
- Kern, J., Trivedi, M., Garver, C., Grannemann, B., Andrews, A., Savla, J., & Schroeder, J. (2006). The pattern of sensory processing abnormalities in autism . *Autism*(10(5)), σσ. 480-494. doi: doi:10.1177/1362361306066564
- Kim, E., Berkovits, L., Bernier, E., Leyzberg, D., Shic, F., Paul, R., & Scassellati, B. (2013). Social robots as embedded reinforcers of social behavior in children with autism. *Journal of Autism Development Disorder*(43), pp. 1038– 1049. doi:doi: 10.1007/s10803-012-1645-2
- Kim, Y., Leventhal, B., Koh, Y., Fombonne, E., Laska, E., Lim, E., & Grinker, R. (2011). Prevalence of autism spectrum disorders in a total population sample. *American Journal of Psychiatry*, pp. 168(9), 904-912. doi:10.1176/appi.ajp.2011.10101532.
- Klin, A., Lin, D., Gorrindo, P., Ramsay, G., & Jones, W. (2009). Two-year-olds with autism orient to non-social contingencies rather than biological motion. *Nature*(459(7244)), σσ. 257-261. doi:doi:10.1038/nature07868
- Kohls, G., Chevallier, C., Troiani, V., & Schultz, R. (2012). Social 'wanting' dysfunction in autism: Neurobiological underpinnings and treatment implications. *Journal of Neurodevelopmental Disorders*(4(1)), pp. 1-20. doi:doi:10.1186/1866-1955-4-10
- Kollias, K., Syriopoulou-Delli , C., Sarigiannidis, P., & Fragulis , G. (2021). The Contribution of Machine Learning and Eye-Tracking Technology in Autism Spectrum Disorder Research: A Systematic Review. *Electronics*, 10, σ. 2982. doi: <https://doi.org/10.3390/electronics10232982>

- Korkmaz, B. (2011). Theory of mind and neurodevelopmental disorders of childhood. *Pediatric Research*(69(5 PART 2)), σσ. 101R-108R. doi:doi:10.1203/PDR.0b013e318212c177
- Lee, J., & Nagae, T. (2021). Social Distance in Interactions between Children with Autism and Robots. *Applied Sciences*, 11, p. 10520. doi:https://doi.org/10.3390/app112210520
- Lee, J., Takehashi, H., Nagai, C., & Obinata, G. (2012). Design of a therapeutic robot for interacting with autistic children through interpersonal touch. In *IEEE RO-MAN: The 21st IEEE International Symposium on Robot and Human Interactive Communication*, σσ. pp. 712– 717.
- Lennard-Brown, S. (2004). *Αυτισμός*. Αθήνα: Σαββάλας.
- Lindsay, S., Proulx, M., Scott, H., & Thomson, N. (2014). Exploring teachers' strategies for including children with autism spectrum disorder in mainstream classrooms. *International Journal of Inclusive Education*(18(2)), σσ. 101-122. doi: doi:10.1080/13603116.2012.758320
- Long Cao, H., Simut, R., Desmet, N., De Beir, A., De Perre, G., Vanderborght, B., & Vanderfaeillie, J. (2020). Robot-Assisted Joint Attention: A Comparative Study Between Children With Autism Spectrum Disorder and Typically Developing Children in Interaction With NAO. *IEEE ACCESS, VOLUME 8*.
- MacLeod, A., & Johnston, P. (2007). Standing out and fitting in: A report on a support group for individuals with asperger syndrome using a personal account. *British Journal of Special Education*(34(2)), σσ. 83-88. doi:doi:10.1111/j.1467-8578.2007.00460.x
- Magrini, M., Curzio, O., Carboni, A., Moroni, D., Salvetti, O., & Melani, A. (2019). Augmented Interaction Systems for Supporting Autistic Children. Evolution of a Multichannel Expressive Tool: The SEMI Project Feasibility Study. *Applied Sciences*(19), σ. 3081. doi:https://doi.org/10.3390/app9153081

- Martínez, Z., & Carvajal, S. (2021). Teaching english online to students with autism spectrum disorder and down syndrome during the covid-19 pandemic. [Ensino de inglês on-line a alunos com transtorno do espectro autista e síndrome de Down durante a pandemia da covid-19]. *Ikala*(26(3)), σσ. 715-730. doi:doi:10.17533/udea.ikala.v26n3a13
- Michaud, F., Salter, T., Duquette, A., Mercier, H., Larouche, H., & Larose, F. (2007). Assistive technologies and child-robot interaction. AAAI-07 (Association for the Advancement of Artificial Intelligence) Conference, Vancouver, Canada. In Proceedings of the 22nd AAAI Conference. *AAAI-07 (Association for the Advancement of Artificial Intelligence) Conference*.
- Narzisi, A., Sesso, G., Berloffia, S., Fantozzi, P., & Muccio, R. (2021). Could you give me the blue brick? lego®-based therapy as a social development program for children with autism spectrum disorder: A systematic review. *Brain Sciences*(11(6)). doi: doi:10.3390/brainsci11060702
- Panceri, J., Freitas, É., de Souza, J., da Luz Schreider, S., Caldeira, E., & Bastos, T. (2021). A new socially assistive robot with integrated serious games for therapies with children with autism spectrum disorder and down syndrome: A pilot study. *Sensors*(21(24)). doi:doi:10.3390/s21248414
- Peca, A., Simut, R., Pintea, S., Costescu, C., & Vanderborght, B. (2014). How do typically developing children and children with autism perceive different social robots? . *Computers in Human Behavior*(41), σσ. 268– 277. doi:doi: 10.1016/j.chb.2014.09.035
- Pioggia, G., Sica, M., Ferro, M., Igliozi, R., Muratori, F., Ahluwalia, A., & Rossi, D. (2007, August). Human-robot interaction in autism: FACE, an android-based social therapy. In Robot and Human interactive Communication, RO-MAN. *The 16th IEEE International Symposium* , σσ. (pp. 605– 612).
- Pons, F., & Harris, P. (2005). Longitudinal change and longitudinal stability of individual differences in children's emotion understanding . *Cognition & Emotion*(19(8)), σσ. 1158–1174.

Qidwai, U. K. (χ.χ.).

Qidwai, U., Kashem, S., & Conor, O. (2020). Humanoid robot as a Teacher's assistant: Helping children with autism to learn social and academic skills. *Journal of Intelligent and Robotic Systems: Theory and Applications*(98(3-4)), σσ. 759-770. doi:doi:10.1007/s10846-019-01075-1

Qiu , S., & Lu, Z. (2022). Treatment Robot for Children with Autism Based on Deep Learning, Paladyn, J. Macintyre et al. (Eds.): SPIoT 2021. *LNDECT* , 98, σσ. pp. 814–819. doi:https://doi.org/10.1007/978-3-030-89511-2_109

Rakhymbayeva , N., Amirova, A., & Sandygulova , A. (2020). A Long-Term Engagement with a Social Robot for Autism Therapy. *Original Research* . doi:doi.org/10.3389/frobt.2021.669972

Rieffe, C., Terwogt, M., & Cowan, R. (2005). Children's understanding of mental states as causes of emotions . *Infant and Child Development*(14(3)), σσ. 259-272. doi:doi:10.1002/icd.391

Rieffe, C., Terwogt, M., & Cowan, R. (2005). Children's understanding of mental states as causes of emotions. . *Infant and Child Development*,(14(3)), σσ. 259-272. doi:doi:10.1002/icd.391

Robles-Bykbaev, V., Galán-Mena, J., López-Nores, M., Robles-Bykbaev, Y., Cornejo-Reyes, J., Quisi-Peralta, D., & León-Wong, V. (2018). A hybrid system to support the psychological intervention for children with autism: A proposal based on knowledge modeling and intelligent technologies. . *International Journal of E-Services and Mobile Applications*(10(4)), pp. 71-100. doi:doi:10.4018/IJESMA.2018100105

Romero, M., Diaz, J., Harari , I., & Ramon, J. (2020, June). Augmented reality for children with Autism Spectrum Disorder. A systematic review. *International Conference on Intelligent Systems and Computer Vision (ISCV)*. doi:https://doi.org/10.1109/ISCV49265.2020.9204125

- Saarni, C. (1990). Emotional competence: How emotions and relationships become integrated. 35, σσ. 115–182.
- Santos, C., Souza , J., Valtuir, Lanza, F., Lacerda, A., Jorge, B., & Mendes, I. (2017). Serious games in virtual environments for health teaching and learning. *Revista da Rede de Enfermagem*(18(5)), pp. 702-709. doi:DOI: 10.15253/2175-6783.2017000500019
- Scherer, K. (2000). A cross-cultural investigation of emotion inferences from voice and speech: Implications for speech technology . *Paper presented at the 6th International Conference on Spoken Language Processing*.
- Schmidt, M., Schmidt, C., Glaser, N., Beck, D., Lim, M., & Palmer, H. (2021). Evaluation of a spherical video-based virtual reality intervention designed to teach adaptive skills for adults with autism: A preliminary report. *Interactive Learning Environments*(29(3)), pp. 345-364. doi:doi:10.1080/10494820.2019.1579236
- Schreibman , L., Dawson, G., Stahmer, A., Landa, R., Rogers, S., McGee, G., & Halladay, A. (2015). Naturalistic developmental behavioral interventions: Empirically validated treatments for autism spectrum disorder. *Journal of Autism and Developmental Disorders*(45(8)), pp. 2411-2428. doi:doi:10.1007/s10803-015-2407-8
- Shahab, M., Taheri, A., Mokhtari, M., Shariati, A., Heidari, R., Meghdari, A., & Alemi, M. (2021). Utilizing social virtual reality robot (V2R) for music education to children with high-functioning autism. *Education and Information Technologies*. doi:https://doi.org/10.1007/s10639-020-10392-0
- Shamsuddin, S., Yussof, H., Mohamed, S., Hanapiah, F., Ismail, L., & Zahari, N. (2012). Initial response in HRI-A case study on evaluation of child with autism spectrum disorders interacting with a humanoid robot NAO. *Paper presented at the Procedia Engineering*(41), pp. 1448-1455. doi:doi:10.1016/j.proeng.2012.07.334
- Steffie, V., Geveke , C., Steenbakkens , A., & Steenbe, W. (2020). Teaching students with Autism Spectrum Disorders: What are the needs of educational professionals? *Teaching and Teacher Education*, 90, σσ. 1-9.

Syriopoulou- Delli, K. (2016). *Education and Special Education for People with Autism Spectrum Disorder*. Thessaloniki: University of Macedonia Publications.

Syriopoulou-Delli , C., & Stefani , A. (2021). Applications of assistive technology in skills development for people with Autism Spectrum Disorder: a systematic review. *Research, Society and Development*, 10, 11. doi:DOI: <http://dx.doi.org/10.33448/rsd-v10i11.19690>

Verhoeff, B. (2013). The autism puzzle: Challenging a mechanistic model on conceptual and historical grounds. *Philosophy, Ethics, and Humanities in Medicine*, σσ. doi:10.1186/1747-5341-8-17.

Volkmar, F., Cohen, D., & Paul, R. (1986). An evaluation of the DSM-III criteria for Infantile Autism. *Journal of the American Academy of Child Psychiatry*, σσ. 25(2), 190- 197.

Wainer, J., Robins, B., Amirabdollahian, F., & Dautenhahn, K. (2014). Using the humanoid robot KASPAR to autonomously play triadic games and facilitate collaborative play among children with autism. . *IEEE Transactions on Autonomous Mental Development*(6), σσ. 183– 199. doi: doi: 10.1109/TAMD.2014.2303116

Warren , Z., Zheng, Z., Swanson, A., Bekele, E., Zhang, L., Crittendon , J., & Sarkar, N. (2013). Can robotic interaction improve joint attention skills? . *Journal of Autism Development Disorder*, σσ. 1– 9.

Weller, R., Sanchez, L., Hagino, O., & Weller, E. (2019). Bipolarity in children. *Bipolar disorder: The science of mental health*, σσ. pp. 135-154. doi:doi:10.4324/9781315054308-15

Williams, Z., Failla, M., Davis, S., Hefl, B., Okitondo, C., Moore, D., & Cascio, C. (2019). Thermal perceptual thresholds are typical in autism spectrum disorder but strongly related to intra-individual response variability. *Scientific Reports*(9(1)). doi:doi:10.1038/s41598-019-49103-2

Wilmshurst, L. (2011). *Εξελικτική Ψυχοπαθολογία: Μια αναπτυξιακή προσέγγιση*, επιμ. Θ. Γ. Μπεζεβεγκης, μτφρ. Μ. Κουλεντιάνου. Αθήνα: Gutenberg.

- Wimpory, D., Hobson, R., Williams, J., & Nash, S. (2000). Are Infants with Autism Socially Engaged? A Study of Recent Retrospective Parental Reports. *Journal of Autism and Developmental Disorders*, σσ. 30, 525–536.
- Wing, L. (1981). Language, social, and cognitive impairments in autism and severe mental retardation . *Journal of Autism and Developmental Disorders*(11(1)), σσ. 31-44. doi:doi:10.1007/BF01531339
- Yeargin-Allsopp, M., Rice, C., Karapurkar, T., Doernberg, N., Boyle, C., & Murphy, C. (2003). Prevalence of autism in a US metropolitan area. *Journal of the American Medical Association*, pp. 289(1), 49-55. doi:10.1001/jama.289.1.49.
- Zablotsky, B., Black, L., Maenner, M., Schieve, L., & Blumberg, S. (2015, Nov 13). Estimated prevalence of autism and other developmental disabilities following questionnaire changes in the 2014 national health interview survey. *Nat Health Stat Report*, pp. 87, 1-20.
- Γκονέλα , Ε. (2006). *Αυτισμός: Αίνιγμα και πραγματικότητα*. Αθήνα: Οδυσσέας.
- Εμίρης , Δ., & Κουλουριώτης , Δ. (2017). *Ρομποτική*. Αθήνα: Τζιολας.