

**‘Specialization in ICTs and Special Education: Psychopedagogy of Integration’
Postgraduate Program Studies
DEMOKRITUS UNIVERSITY OF THRACE Department of Hellenic Philology
in collaboration with
NCSR DEMOKRITOS Informatics and Telecommunications Institute**

AUTISM AND MUSIC THERAPY

CHALMOUKI ARETI

POSTGRADUATE
THESIS

SUPERVISOR – COMMITTEE

1. Συριοπούλου Χριστίνα
Καθηγήτρια Πανεπιστήμιο Μακεδονίας
2. Γούπος Θεόδωρος
Συνεργάτης Ερευνητής Ι.Π.Τ. Ε.Κ.Ε.Φ.Ε. “ΔΗΜΟΚΡΙΤΟΣ”
3. Δόση Ιφιγένεια
Μεταδιδακτορική ερευνήτρια Τ.Ε.Φ. ΔΠΘ

KOMOTINI / ATHENS 2018

Περίληψη

Η παρούσα εργασία παρουσιάζει τη μουσικοθεραπεία ώστε θεραπευτική προσέγγιση του αυτισμού. Στο πρώτο κεφάλαιο γίνεται μια συνοπτική ανασκόπηση του φάσματος των αυτιστικών διαταραχών και αναλύει την ιστορία του, τη διάγνωση, την κλινική εικόνα και τις προτεινόμενες θεραπείες. Εν συνεχεία εξετάζεται η μουσική ως μέσο θεραπείας από την αρχαιότητα έως σήμερα με πηγές αρχαίων γραπτών και επιστημονικών ερευνών. Πριν προχωρήσουμε στο κυρίως μέρος της εργασίας προσεγγίζεται η εφαρμογή της μουσικής κατά τη διάγνωση, την αξιολόγηση και τη θεραπεία των παιδιών με ειδικές ανάγκες γενικά. Έπειτα παρουσιάζεται αναλυτικά η επιστήμη της μουσικοθεραπείας και το επάγγελμα του μουσικοθεραπευτή ενώ τέλος αναφερόμαστε εκτενώς στην αποτελεσματικότητα της μουσικοθεραπείας και προτεινόμενες δραστηριότητες για τα παιδιά που έχουν διαγνωστεί με αυτιστική διαταραχή.

Abstract

This thesis presents music therapy as a therapeutic approach of autism. The first chapter summarizes the spectrum of autistic disorders and analyzes its history, diagnosis, clinical image and proposed treatments. Subsequently, music is demonstrated as a means of treatment from antiquity to date with sources of ancient written scripts and scientific research. Before moving on to the main part of thesis, the application of music is approached on diagnosing, evaluating and treating children with special needs in general. Then we discuss the science of music therapy and the profession of music therapist, while we extensively refer to the effectiveness of music therapy and the proposed activities for children diagnosed with autistic disorder.

References

Ελληνική Βιβλιογραφία

Γεωργιάδη Ε., (2007), Οι θεραπευτικές ιδιότητες της μουσικής στον πέρασμα των αιώνων, Το βήμα του Ασκληπιού, τεύχος 2ο.

Δρίτσας Θ., "Μουσική και Ψυχοσωματική Υγεία", Ύδρα: ημερίδα "Αισθητηριακή Επικοινωνία, Σωματική Άσκηση και η συμβολή τους στη διατήρηση της υγείας", 2 Ιουνίου 2001.

Καλύβα, Ε. (2005). Αυτισμός-Εκπαιδευτικές και θεραπευτικές προσεγγίσεις. Αθήνα: Παπαζήση.

Καρτασίδου Α. (2004), Μουσική εκπαίδευση στην ειδική παιδαγωγική, Αθήνα: Τυπωθήτω.

Καρτασίδου- Λελούδα Στάμου Α. (2006), Μουσική Παιδαγωγική, Μουσική Εκπαίδευση στην Ειδική Αγωγή, Μουσικοθεραπεία, Πρακτικά Ημερίδας, Πανεπιστήμιο Μακεδονίας.

Κοψαχείλης Σ., (1996), Η μουσικοθεραπεία στην Αρχαία Ελλάδα, Αριστοτέλης και Μουσικοθεραπεία και η σύγχρονη πορεία της επιστήμης, Θεσσαλονίκη: Μαϊάνδρος.

Μακρής Ι.& Μακρή Δ., (2003), Εισαγωγή στη Μουσικοθεραπεία, Αθήνα: Γρηγόρη.

Παπαδοπούλου Ζ., (2003), Μουσική και ψυχοσωματική αγωγή στην Αρχαία Ελλάδα, απόσπασμα από Google scholar.

Παπανικολάου Ε. (2011), Μουσικοθεραπεία στην Ελλάδα: Δεδομένα και Εξελίξεις. Στα πρακτικά της 1ης Επιστημονικής Ημερίδας του ΕΣΠΕΜ. Approaches: Μουσικοθεραπεία & Ειδική Μουσική Παιδαγωγική, Ειδικό Τεύχος 2011, 7-8.

Παπαοικονόμου- Κηπουργού Κ. (2007), Η μουσική στην Αρχαία Ελλάδα, Αθήνα: Γεωργιάδης «Βιβλιοθήκη των Ελλήνων».

Πρίνου- Πολυχρονιάδου Α. (1995), Μουσική και Ψυχολογία, Εισαγωγή στη Μουσικοθεραπεία, Αθήνα: Θυμάρι.

Σακαλάκ Η. (2004), Μουσικές Βιταμίνες, Αθήνα: Fagotto.

Σίτου Σ., (1990), Πλατωνικά παιδαγωγικά κείμενα: εισαγωγή- μετάφραση- σχόλια: παιδαγωγικά, φιλοσοφικά, ψυχολογικά, πραγματολογικά, Ιωάννινα: Σίτος.

Συμεωνίδου Χ., Οι θεραπευτικές σχέσεις της μουσικής στην Αρχαία Ελλάδα, <http://www.ello.gr> [ημ. Προσπέλασης: 04/05/2018].

Φρανσίσ Κ, (2008), Διάχυτες Αναπτυξιακές Διαταραχές ή Διαταραχές του αυτιστικού φάσματος, ΕΠΕΑΕΚ: Πρόσβαση για Όλους.

Ξένη Βιβλιογραφία

Allgood N. (2003). Music and sensory integration for children with autism spectrum disorders. *Early Child. Connect.* 9, 21–27.

Al-Qabandi M, Gorter JW, Rosenbaum P (2011). Early autism detection: are we ready for routine screening? *Pediatrics*, 128:e211-217.

Alvin, J. (1966). *Music therapy*. London: John Baker.

American Psychiatric Association (2000). *Diagnostic and Statistical Manual of Mental Disorders*, 4th edition, Text Revision. Washington, DC: APA.

AMTA (2006), *Music Therapy, An overview*. <https://www.proedinc.com> [ημ . προσπέλασης: 02/05/2018].

Anderson, W. (1977). Introduction. In W. Anderson (Ed.), *Therapy and the arts: Tools of consciousness*. New York: Harper Colophon Books.

Asperger H (1938). [Das psychisch abnormale Kind]. *Wiener Klinische Wochenschrift*, 51:1314–1317.

Asperger H (1944). [Die "Autistischen Psychopathen" im Kindesalter]. *Archiv für psychiatrie und nervenkrankheiten*, 117: 76–136. Translated and annotated by Frith U (1991). *Autistic psychopathy in childhood*. In Frith U (ed), *Autism and Asperger Syndrome*. Cambridge, UK: Cambridge University Press, pp37–92.

Atterbury B. (1983), A comparison of rhythm pattern perception and performance in normal and learning- disabled readers, age seven and eight. *Journal of Research in Music Education*, 31 (4), 259- 270.

Bakare MO, Munir KM (2011). Autism spectrum disorders in Africa. In Mohammad-Reza Mohammadi (ed), *A Comprehensive Book on Autism Spectrum Disorders*. In Tech, pp183-184.

Barnanson S, et al. The effects of music interventions on anxiety in the patient after coronary artery by-pass grafting. *Heart Lung*, 1995; 24:124-132.

Barnevik-Olsson, M., Gillberg C, Fernell E (2008). Prevalence of autism in children born to Somali parents living in Sweden: a brief report. *Developmental Medicine & Child Neurology*, 50:598-601.

Baron-Cohen S (2009). Autism: the empathizing-systemizing (ES) theory. *Annals of the New York Academy of Sciences*, 1156:68-80.

Belmonte M. K., Allen G., Beckel-Mitchener A., Boulanger L. M., Carper R. A., Webb S. J. (2004). Autism and abnormal development of brain connectivity. *J. Neurosci.* 24, 9228–9231.

Belmonte MK, Allen G, Beckel-Mitchener A et al (2004). Autism and abnormal development of brain connectivity. *The Journal of Neuroscience*, 24:9228– 9231.

Bergmann T, Sappok T, Diefenbacher A, Dziobek I. Music in diagnostics: using musical interactional settings for diagnosing autism in adults with intellectual developmental disabilities. *Nordic J Music Ther.* 2016;25(4).

Bergmann T, Sappok T, Diefenbacher A, et al. Music-based autism diagnostics (MUSAD) – a newly developed diagnostic measure for adults with intellectual developmental disabilities suspected of autism. *Res Dev Disabil.* 2015;43–44:123–135.

Binder, V., Binder, A., & Rimland, B. (Ed.). (1976). *Modern therapies*. Englewood Cliffs, N.J.: Prentice-Hall.

Blood A. et al. Emotional responses to pleasant and unpleasant music correlate with activity in paralimbic brain regions. APET scan study. *Nature Neuroscience* 1999;2(4):382-387.

Bonnell A., Mottron L., Peretz I., Trudel M., Gallun E. (2003). Enhanced pitch sensitivity in individuals with autism: a signal detection analysis. *J. Cogn. Neurosci.* 15, 226–235.

Boxill, E. H. (1981). A continuum of awareness: Music therapy with the developmentally handicapped. *Music Therapy*, 1(1), 17–23.

Brown J. (1981). Effects of an integrated physical education/music program in changing early childhood perceptual-motor performance. *Percept. Mot. Skills* 53, 151–154.

Brugha TS, Mc Manus S, Bankart J et al (2011). Epidemiology of autism spectrum disorders in adults in the community in England. *Archives of General Psychiatry*, 68:459-65.

Bruscia K. (1989). *Defining music therapy*. Spring Lake PA: Spring House.

Buccino et al., 2004, Cattaneo and Rizzolatti, 2009, Rizzolatti et al., 2009, ό.π.

Buccino G., Binkofski F., Riggio L. (2004). The mirror neuron system and action recognition. *Brain Lang.* 89, 370–376.

Buday E.M. (1995), The effects of signed and spoken words taught with music on sign and speech imitation by children with autism, *Journal of Music Therapy*, 32 (3), 189- 202.

Bunt L. interviewed by Cathy Carham (2000), *Historical perspectives- Interview Series*, *British Journal of Music Therapy*: 14(2), 56- 61.

Burford B. (1988) Action cycles: rhythmic actions for engagement with children and young adults with profound mental handicap, *European Journal of Special Educational Needs*, 3.

Butzlaff R. (2000). Can music be used to teach reading? *J. Aesthet. Educ.* 34, 167–178.

Byers JF, et al. Effect of music intervention on noise annoyance, heart rate and blood pressure in cardiac surgery patients. *Am J Crit Care* 1997;6:183-191.

Callan D. E., Tsytsarev V., Hanakawa T., Callan A. M., Katsuhara M., Fukuyama H., et al. (2006). Song and speech: brain regions involved with perception and covert production. *Neuroimage* 31, 1327–1342.

Carpente JA. Individual music-centered assessment profile for neurodevelopmental disorders (IMCAP-ND): new developments in music-centered evaluation. *Music Ther Perspect.* 2014;32(1):56–60.

Carroll D. (1996). A Study of the Effectiveness of an Adaptation of Melodic Intonation Therapy in Increasing the Communicative Speech of Young Children with Down Syndrome. Master's thesis, McGill University.

Cattaneo L., Rizzolatti G. (2009). The mirror neuron system. *Arch. Neurol.* 66, 557.

Clendenin, W. R. (1965). *Music: History and theory*. Garden City, N.Y.: Doubleday & Company.

Coast music therapy <http://www.coastmusictherapy.com/autism-music-therapy-activities/>, (ημ. Προσπέλασης: 24/05/2018).

Dapretto M., Davies M. S., Pfeifer J. H., Scott A. A., Sigman M., Bookheimer S. Y., et al. (2005). Understanding emotions in others: mirror neuron dysfunction in children with autism spectrum disorders. *Nat. Neurosci.* 9, 28–30.

Darrow A. A., Armstrong T. (1999). Research on music and autism: implications for music educators. *Update Appl. Res. Music Edu.* 18, 15–20.

De Fossé L., Hodge S. M., Makris N., Kennedy D. N., Caviness V. S., McGrath L., et al. (2004). Language–association cortex asymmetry in autism and specific language impairment. *Ann. Neurol.* 56, 757–76.

DiGiammarino M. (1990), Functional Music Skills of Persons with Mental Retardation, *Journal of Music Therapy*, 27 (4), 209- 220.

Disereus, C. M. (1926). *A psychology of music: The influence of music on behavior*. Princeton, N.J.: Princeton University Press.

Duffy B., Fuller R. (2000). Role of music therapy in social skills development in children with moderate intellectual disability. *J. Appl. Res. Intellect. Disabil.* 13, 77–89

Edelson S. M., Arin D., Bauman M., Lukas S. E., Rudy J. H., Sholar M., et al. (1999). Auditory integration training: a double-blind study of behavioral and electrophysiological effects in people with autism. *Focus Autism Other Dev. Disabil.* 14, 73–81.

Edgerton C. L. (1994). The effect of improvisational music therapy on the communicative behaviors of autistic children. *J. Music Ther.* 31.

Elbert et al. Increased cortical representation of the fingers of the left hand in string players. *Science* 1995;270:305-307.

Erdoz D. Preservation of acquired music performance functions with a dominant hemisphere lesion: A case report. *Clinical and experimental Neurology*, 1981;18:102-108.

Etkin P. interviewed by George Tsiris (2010), On Developing policies and practices in music therapy: Personal Reflections from the experience of Nordoff Robbins in London, *Approaches: Music Therapy & Special Music Education*: 2(1), 12-24.

Farmer K. J. (2003). The Effect of Music vs. Nonmusic Paired with Gestures on Spontaneous Verbal and Nonverbal Communication Skills of Children with Autism between the Ages 1-5. Master's Thesis, Tallahassee, FL, Florida State University (School of Music).

Findlay E. (1971). *Rhythm and Movement: Applications of Dalcroze Eurhythmics*. Evanston, IL: Summy-Birchard Inc.

Finn M (1997). In the case of Bruno Bettelheim. *First Things*, 74:44-48.

Fombonne E (2009). Epidemiology of pervasive developmental disorders. *Pediatric Research*, 65:591-598.

Forgeard M. (2008). Practicing a musical instrument in childhood is associated with enhanced verbal ability and nonverbal reasoning. *PLoS ONE* 3:e3566 10.1371/journal.pone.0003566.

Foxton J. M., Talcott J. B., Witton C., Hal B., McIntyre F., Griffiths T. D. (2003). Reading skills are related to global, but not local, acoustic pattern perception. *Nat. Neurosci.* 6, 343–344.

Frazier T, Youngstrom E, Speer L (2012). Validation of proposed DSM-5 criteria for autism spectrum disorder. *Journal of the American Academy of Child and Adolescent Psychiatry*, 51:28-40.

Frego R. J. D., Gillmeister G., Hama M., Liston R. E. (2004). The dalcroze approach to music therapy, in *Introduction to Approaches in Music Therapy*, ed Darrow A., editor. (Silver Springs, MD: American Music Therapy Association;), 15–24.

Freitag CM, Staal W, Klauck SM et al (2010). Genetics of autistic disorders: review and clinical implications. *European Child & Adolescent Psychiatry*, 19:169-178.

Fuentes J, Bakare M, Munir K, (2011), *Autism Spectrum Disorders*, Developmental Disorders, Chapter 2, IACAPAP Textbook of Child and Adolescent Mental Health.

Gaston, E. T. (Ed.). (1968). *Music in therapy*. New York: Macmillan.

Gattino G. S., dos Santos Riesgo R., Longob D., Leite J. C. L., Faccini L. S. (2011). Effects of relational music therapy on communication of children with autism: a randomized controlled study. *Nord. J. Music Ther.* 20, 142–154.

Gerard, R. W. (1958). *Education and the imagination*. In I. Kaufman (Ed.), *Education and the imagination in science and art*. Ann Arbor, Mich.: University of Michigan.

Gfeller K, Davis W. The music therapy treatment process. In: Davis W, Gfeller K, Thaut M, editors. *Introduction to Music Therapy: Theory and Practice*. 3rd ed. Silver Spring, MD: American Music Therapy Association; 2008. pp. 429–486.

Gillberg C, Schaumaun H, Gillberg IC (1995). Autism in immigrants: Children born in Sweden to mother born in Uganda. *Journal of Intellectual Disability Research*, 39:141-144.

Gold C., Wigram T., Elephant C. (2006). Music therapy for autistic spectrum disorder. *Cochrane Database Syst. Rev.* CD004381 10.1002/14651858.CD004381.pub2.

Grant WB, Soles CM (2009). Epidemiological evidence supporting the role of maternal Vitamin-D deficiency as a risk factor for the development of infantile autism. *Dermato-Endocrinology*, 1:223-228.

Green D., Charman T., Pickles A., Chandler S., Loucas T., Simonoff E., et al. (2009). Impairment in movement skills of children with autistic spectrum disorders. *Dev. Med. Child Neurol.* 51, 311–316.

Gunter P. L., Fox J. J., McEvoy M. A., Shores R. E. (1993). A case study of the reduction of aberrant, repetitive responses of an adolescent with autism. *Educ. Treat. Child.* 16, 187–197.

Habib M., Besson M. (2009). What do music training and musical experience teach us about brain plasticity? *Music Percept.* 26, 279–285.

Happe F, Frith U (2006). The weak coherence account: Detail focused cognitive style in autism spectrum disorder. *Journal of Autism and Developmental Disorders*, 36:5–25.

Haueisen J., Knösche T. R. (2001). Involuntary motor activity in pianists evoked by music perception. *J. Cogn. Neurosci.* 13, 786–792.

Hazlett HC, Poe M, Gerig G et al (2005). Magnetic resonance imaging and head circumference study of brain size in autism: birth through age 2 years. *Archives of General Psychiatry*, 62:1366-1376.

Heaton P. (2003). Pitch memory, labelling and disembedding in autism. *J. Child Psychol. Psychiatry* 44, 543–551.

Hesling I., Dilharreguy B., Peppé S., Amirault M., Bouvard M., Allard M. (2010). The integration of prosodic speech in high functioning autism: a preliminary fMRI study. *PLoS ONE* 5:e11571 10.1371/journal.pone.0011571.

Hess K., Morrier M., Heflin L., Ivey M. (2008). Autism treatment survey: services received by children with autism spectrum disorders in public school classrooms. *J. Autism Dev. Disord.* 38.

Hickok G., Poeppel D. (2004). Dorsal and ventral streams: a framework for understanding aspects of the functional anatomy of language. *Cognition* 92, 67–99.

Himberg T. (2006). Co-operative tapping and collective time-keeping—differences of timing accuracy in duet performance with human or computer partner, in Paper Presented at the 9th International Conference on Music Perception and Cognition (Bologna, Italy.

Hughes JR, et al. The Mozart Effect on epileptiform activity. *Clin Electroencephalogr* 1998;29:109-119.

Jakobson L. S., Cuddy L. L., Kilgour A. R. (2003). Time lagging: a key to musicians' superior memory. *Music Percept.* 20, 307–313.

Johnson CP, Myers SM (2007). Identification and evaluation of children with autism spectrum disorders. *Pediatrics*, 120:1183-215.

Jones, M. (1953). *The therapeutic community*. New York: Basic Books.

Kanner L (1943). Autistic disturbances of affective contact. *The Nervous Child*, 2:217-250. Reprinted in *Acta Paedopsychiatrica*, 1968, 35:100-136.

Katagiri J. (2009). The effect of background music and song texts on the emotional understanding of children with autism. *J. Music Ther.* 46, 15–31.

Katsanevaki A. (2001), “Musical contests: A Contribution to a technical Development or a Dissolution of the “Lofty and Hellenic Style”? Approaching Historical Resources in the field of Ethnomusicology.” *Proceedings of the IVth International Meeting of MOISA*, Lecce, 28-30 October 2010.

Kern P., Wolery M., Aldridge D. (2007). Use of songs to promote independence in morning greeting routines for young children with autism. *J. Autism Dev. Disord.* 37, 1264–1271.

Kim J., Wigram T., Gold C. (2009). Emotional, motivational and interpersonal responsiveness of children with autism in improvisational music therapy. *Autism* 13, 389–409.

Kim YS, Leventhal BL, Koh YJ et al (2011). Prevalence of autism spectrum disorders in a total population sample. *American Journal of Psychiatry*, 168:904-912.

Kinney DK, Barch DH, Chayka B et al (2010). Environmental risk factors for autism: do they help cause de novo genetic mutations that contribute to the disorder? *Medical Hypothesis*, 74:102-106

Kirschner S., Tomasello M. (2009). Joint drumming: social context facilitates synchronization in preschool children. *J. Exp. Child Psychol.* 102, 299–314
 10.1016/j.jecp.2008.07.005.

Kleinspehn-Ammerlahn A., Riediger M., Schmiedek F., von Oertzen T., Li S. C., Lindenberger U. (2011). Dyadic drumming across the lifespan reveals a zone of proximal development in children. *Dev. Psychol.* 47, 632–644.

Koelsch S. (2009). A neuroscientific perspective on music therapy. *Ann. N.Y. Acad. Sci.* 1169, 374–384.

Kraus N., Chandrasekaran B. (2010). Music training for the development of auditory skills. *Nat. Rev. Neurosci.* 11, 599–605.

Lahav A., Saltzman E., Schlaug G. (2007). Action representation of sound: audiomotor recognition network while listening to newly acquired actions. *J. Neurosci.* 27, 308–314.

Lai G., Pantazatos S. P., Schneider H., Hirsch J. (2012). Neural systems for speech and song in autism. *Brain* 135(Pt 3), 961–975.

Lanovaz M. J., Fletcher S. E., Rapp J. T. (2009). Identifying stimuli that alter immediate and subsequent levels of vocal stereotypy: a further analysis of functionally matched stimulation. *Behav. Modif.* 33, 682–704.

Lazar M., Music Therapy and Autism: Tips, Activities, and Research, <http://autismresourcemom.org/images/ARM-Music-Therapy.pdf>, (ημ. Προσπέλασης: 24/05/2018).

Li N, Chen G, Song X et al (2011). Prevalence of autism caused disability among Chinese children: a national population-based survey. *Epilepsy & Behavior*, 22:786789.

Lim H. A. (2010). Effect of “Developmental Speech and Language Training through Music” on speech production in children with autism spectrum disorders. *J. Music Ther.* 47, 2–26.

Lombardo M, Baron-Cohen S, Belmonte M et al (2011). Neural endophenotypes for social behaviour in autism spectrum conditions. In J Decety, J Cacioppo (eds), *The Handbook of Social Neuroscience*, Oxford: Oxford University Press.

Lord C, Rutter M, DiLavore P, Risi S. *The ADOS-G (Autism Diagnostic Observation Schedule-Generic)* Los Angeles: Western Psychological Services; 1999.

Lotter V (1978). Childhood autism in Africa. *Journal of Child Psychology & Psychiatry*, 19:231-244.

Luskin FM, et al. A review of mind-body therapies in the treatment of cardiovascular disease. Part1: Implications for the elderly. *Alter Ther Health Med* 1998; 4 (3) : 46-61.

Ma D, Salyakina D, Jaworski JM et al (2009). A genome-wide association study of autism reveals a common novel risk locus at 5p14.1. *Annals of Human Genetics*, 73:263-273

Marques C., Moreno S., Castro S. L., Besson M. (2007). Musicians detect pitch violation in a foreign language better than nonmusicians: behavioral and electrophysiological evidence. *J. Cogn. Neurosci.* 19, 1453–1463
10.1162/jocn.2007.19.9.1453.

Meinecke, B. (1948). Music and medicine. In D. Schullian & M. Schoen (Eds.), *Music and medicine*. New York: Henry Schuman.

Minschew N. J., Sung K. B., Jones B. L., Furman J. M. (2004). Underdevelopment of the postural control system in autism. *Neurology* 63, 2056–2061.

Molnar-Szakacs I., Overy K. (2006). Music and mirror neurons: from motion to ‘e’ motion. *Soc. Cogn. Affect. Neurosci.* 1, 235–241.

Morton L., Kershner J.R., Siegel L.S. (1990), The potential for therapeutic applications of music on problems related to memory and attention, *Journal of Music Therapy*, 27 (4), 195- 208.

Muhle R, Trentacoste SV, Rapin I (2004). The genetics of autism. *Pediatrics*, 113:472-486.

National Autism Center . Findings and Conclusions: National Standards Project, Phase 2. Randolph, MA: National Autism Center; 2015.

Neubecker AJ. (1986), *Η μουσική στην Αρχαία Ελλάδα*, Αθήνα: Οδυσσέας.

NICE (2011). Autism: Recognition, Referral and Diagnosis of Children and Young People on the Autism Spectrum. London: Royal College of Obstetricians and Gynaecologists.

Nordoff, P., & Robbins, C. (1977). Creative music therapy (audiocassette included). New York: John Day.

Norton A., Zipse L., Marchina S., Schlaug G. (2009). Melodic intonation therapy. *Ann. N.Y. Acad. Sci.* 1169, 431–436.

O'Loughlin R. (2000). Facilitating Prelinguistic Communication Skills of Attention by Integrating a Music Stimulus within Typical Language Intervention with Autistic Children. Doctoral Thesis, University of Toledo.

Osborne J. (2003), Art and the child with autism: therapy or education? *Early Child Development and Care*, 173 (4), 411- 423.

Overy K. (2000). Dyslexia, temporal processing and music: the potential of music as an early learning aid for dyslexic children. *Psychol. Music* 28, 218–229.

Overy K. (2008). Classroom rhythm games for literacy support, in *Music and Dyslexia: A Positive Approach*, eds Westcombe J., Miles T., Ditchfield D., editors. (Chichester: John Wiley & Sons Ltd.), 26–44.

Overy K., Molnar-Szakacs I. (2009). Being together in time: musical experience and the mirror neuron system. *Music Percept.* 26, 489–504
 10.1371/journal.pone.0013812.

Pasiali V. (2004). The use of prescriptive therapeutic songs in a home-based environment to promote social skills acquisition by children with autism: three case studies. *Music Ther. Perspect.* 22, 11–20.

Patel A. D. (2003). Language, music, syntax and the brain. *Nat. Neurosci.* 6, 674–681.

Patel A. D. (2011). Why would musical training benefit the neural encoding of speech? The OPERA hypothesis. *Front. Psychol.* 2:142.

Patterson A. (2003), Music Teachers and Music Therapists: Helping children together, *Music Educators Journal*, 89 (4), 35- 38.

Pavlicevic M. (2000), Improvisation in music therapy: Human communication in sound, *Journal of Music Therapy*, XXXVII, 37 (4), 269- 285.

Pellitteri J. (2000), Music Therapy in the special education setting, *Journal of educational and psychosocial consultation* 11 (3&4), 379- 391.

Peretz I, et al. Dissociation between music and language functions after cerebral resection: A new case of amusia without aphasia. *Can J Exp Psychol* 1997;51:354-68.

Perry MMR. (2003), Relating improvisational music therapy with severely and multiply disabled children to communication development, *Journal of Music Therapy*, 40 (3), 227- 246.

Phillips-Silver J., Trainor L. J. (2007). Hearing what the body feels: auditory encoding of rhythmic movement. *Cognition* 105, 533–546.

Provost B., Lopez B. R., Heimerl S. (2007). A comparison of motor delays in young children: autism spectrum disorder, developmental delay, and developmental concerns. *J. Autism Dev. Disord.* 37, 321–328.

Rapp J. T. (2007). Further evaluation of methods to identify matched stimulation. *J. Appl. Behav. Anal.* 40, 73–88.

Rausher FH, et al. Listening to Mozart enhances spatial-temporal reasoning: towards a neurophysiological basis. *Neurosci Lett*, 1995;185:44-7.

Rider M.S. (1981), The assessment of cognitive functioning level through musical perception, *Journal of Music Therapy*, 18 (3), 110- 119.

Rimland B. *Infantile Autism: The Syndrome and Its Implications for a Neural Theory of Behavior*. New York, NY: Appleton-Century-Crofts.

Rimland B., Edelson S. M. (1995). Brief report: a pilot study of auditory integration training in autism. *J. Autism Dev. Disord.* 25, 61–70.

Robins DL, Fein D, Barton ML et al (2001). The Modified Checklist for Autism in Toddlers: an initial study investigating the early detection of autism and pervasive developmental disorders. *Journal of Autism and Developmental Disorders*, 31,131-144.

Rodriguez-Fornells A., Rojo N., Amengual J. L., Ripolles P., Altenmuller E., Munte T. F. (2012). The involvement of audio-motor coupling in the music-supported therapy applied to stroke patients. *Ann. N.Y. Acad. Sci.* 1252, 282–293.

Rowley, G. (Ed.). (1978). *The book of music*. Englewood Cliffs, N.J.: Prentice Hall.

Rutter M, LeCouteur A, Lord C. *Autism Diagnostic Interview – Revised*. Los Angeles: Western Psychological Services; 2008.

Ruud E. (1998), *Music Therapy: Improvisation, communication and culture*, Gilsum NH: Barcelona Publishers.

Sadock BJ, Sadock VA (2008). *Kaplan & Sadock’s Concise Textbook of Child and Adolescent Psychiatry*. Philadelphia, PA: Wolters Kluwer/Lippincott William & Wilkins, pp 65-74.

Scarteli JP. A rationale for subcortical involvement in human response to music. In *Applications of Music in Medicine*, Ed. Cheryl Dileo Maranto, 1991, NAMT, Inc, USA.

Schimdt C., Sinor J. (1998) An investigation of the relationships among music audiation, musical creativity, and cognitive style, *Journal of Research in Music Education*, 34 (3), 160- 172.

Schlaug G., Altenmüller E., Thaut M. (2010). Music listening and music making in the treatment of neurological disorders and impairments. *Music Percept.* 27, 249–250.

Schön D., Cyrille M., Besson M. (2004). The music of speech: music training facilitates pitch processing in both music and language. *Psychophysiology* 41, 341–349 10.1111/1469-8986.00172.x

Schopler E, Van Bourgondien ME, Wellman GJ, Love SR. *Childhood Autism Rating Scale (CARS)* 2nd ed. Los Angeles, CA: Western Psychological Services; 2010.

Schwartz FJ, Ritchie R. Music listening in neonatal intensive care units. Eds. Cheryl Dileo, American Music Therapy Association, Inc, 1999, USA.

Sinha Y., Silove N., Hayen A., Williams K. (2011). Auditory integration training and other sound therapies for autism spectrum disorders (ASD). Cochrane Database Syst. Rev. CD003681.

Smalley SL (1991). Genetic influences in autism. *Psychiatric Clinics of North America*, 14:125-139.

Sparks R., Helm N., Albert M. (1974). Aphasia rehabilitation resulting from melodic intonation therapy. *Cortex* 10, 303–316

Stamou L., (2002), “Plato and Aristotle on Music and Music education, Lessons from Ancient Greece”, *International Journal of Music Education*.

Stephens C. E. (2008). Spontaneous imitation by children with autism during a repetitive musical play routine. *Autism* 12, 645–671.

Tallal P., Gaab N. (2006). Dynamic auditory processing, musical experience and language development. *Trends Neurosci.* 29, 382–390.

Thaut M. Assessment and the transformational design model (TDM) In: Thaut M, Hoemberg V, editors. *Handbook of Neurologic Music Therapy*. New York, NY: Oxford; 2014. pp. 60–68.

Toolan PG.& Coleman SY. (1994), Music Therapy, a description of process: Engagement and avoidance in five people with learning disabilities, *Journal of Interllectual Disability Research*, 38, 433- 444.

Trevarthen C., Aitken K., Papoudi D. & Robarts J. (1998), *Children with autism: Diagnosis and interventions to meet their needs*. London and Philadelphia: Jessica Kingsley Publishers.

Vilensky J. A., Damasio A. R., Maurer R. G. (1981). Gait disturbances in patients with autistic behavior: a preliminary study. *Arch. Neurol.* 38, 646–649.

Wakefield A, Murch S, Anthony A et al (1998). Ileal-lymphoidnodular hyperplasia, non-specific colitis, and pervasive developmental disorder in children. *Lancet*, 351:637-641(retracted).

Wan C. Y., Bazen L., Baars R., Libenson A., Zipse L., Zuk J., et al. (2011). Auditory-motor mapping training as an intervention to facilitate speech output in non-verbal children with autism: a proof of concept study.

Wan C. Y., Rüber T., Hohmann A., Schlaug G. (2010b). The therapeutic effects of singing in neurological disorders. *Music Percept.* 27, 287–296.

West ML., (1999), *Η αρχαία Ελληνική Μουσική*, Αθήνα: Παπαδήμας.

Wetherby AM, Woods J, Allen L et al (2004). Early indicators of autism spectrum disorders in the second year of life. *The Journal of Autism and Developmental Disorders*, 34:473-493.

William P, Charman T, Skuse D (2012). Testing the construct validity of proposed criteria for DSM-5 autism spectrum disorder. *Journal of the American Academy of Child and Adolescent Psychiatry*, 51:41-50.

Wilson B., Smith D. (2000), Music Therapy assessment in school settings: a preliminary investigation, *Journal of Music therapy*, 37 (2), 95- 117.

Wiltermuth S. S., Heath C. (2009). Synchrony and cooperation. *Psychol. Sci.* 20, 1–5
10.1111/j.1467-9280.2008.02253.x.

Wimpory D., Chadwick P., Nash S. (1995). Brief report: musical interaction therapy for children with autism: an evaluative case study with two-year follow-up. *J. Autism Dev. Disord.* 25, 541–552.

Wing L (1997). The history of ideas on autism: legends, myths and reality. *Autism*,1:13–23

Wolberg, L. R. (1954). *The technique of psychotherapy*. New York: Grune & Stratton.

Wood S. R. (1991). *A Study of the Effects of Music on Attending Behavior of Children with Autistic-Like Syndrome*. Master's Thesis, San Jose State University.

Zachopoulou E., Tsapakidou A., Derri V. (2004). The effects of a developmentally appropriate music and movement program on motor performance. *Early Child. Res. Q.* 19, 631–642.

Zatorre R. J., Chen J. L., Penhune V. B. (2007). When the brain plays music: auditory–motor interactions in music perception and production. *Nat. Rev. Neurosci.* 8, 547–558.

Zollweg W. (1997). The efficacy of auditory integration training: a double blind study. *Am. J. Audiol.* 6, 39.

Zwaigenbaum L, Bryson S, Lord C et al (2009). Clinical assessment and management of toddlers with suspected autism spectrum disorder: insights from studies of high-risk infants. *Pediatrics*, 123:1383-1391.

Zwaigenbaum L, Bryson S, Rogers T. et al (2005). Behavioral manifestations of autism in the first year of life. *International Journal of Developmental Neuroscience*, 23:143-152.