

**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»**

**ΣΤΡΑΤΗΓΙΚΕΣ ΠΑΡΕΜΒΑΣΗΣ ΚΑΙ ΑΣΚΗΣΕΙΣ ΠΟΥ ΕΠΗΡΕΑΖΟΥΝ ΤΗΝ ΠΝΕΥΜΑΤΙΚΗ
(ΓΝΩΣΤΙΚΗ ΚΑΙ ΣΥΝΑΙΣΘΗΜΑΤΙΚΗ) ΑΝΑΠΤΥΞΗ ΠΑΙΔΙΩΝ ΜΕ ΜΑΘΗΣΙΑΚΕΣ
ΔΥΣΚΟΛΙΕΣ**

**INTERVENTION STRATEGIES AND EXERCISES THAT AFFECT THE INTELLECTUAL
(COGNITIVE AND EMOTIONAL) DEVELOPMENT OF CHILDREN WITH LEARNING
DISABILITIES**

της

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Μεταπτυχιακή διατριβή που υποβάλλεται
στην τριμελή επιτροπή για την απόκτηση του μεταπτυχιακού τίτλου του
Προγράμματος 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
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ΠΕΡΙΛΗΨΗ

Η «νευρο-ψυχολογική μηχανή» του ανθρώπου έχει τρία επίπεδα: τη Διανόηση, το Συναίσθημα και τη Βιολογία. Προκειμένου να αναπτυχθεί το άτομο νοητικά, θα πρέπει να εξελίξει και τις τρεις αυτές πτυχές του συστήματός του, καθώς η ευφυΐα είναι μια σημαντική πτυχή του νου που περιλαμβάνει πολλές γνωστικές ικανότητες, όπως την ικανότητα λογικής, τον προγραμματισμό, την επίλυση προβλημάτων, την προσαρμογή, την αφηρημένη σκέψη, τη χρήση γλώσσας και μάθησης. Η απόκτηση γνώσης λοιπόν, δεν αποτελεί προϊόν μίας εξαρτημένης μάθησης ή μίας συσσώρευσης πληροφοριών, ούτε μίας αποκλειστικής διδασκαλίας. Είναι ένα πολύπλοκο συγκρότημα διαδικασιών, στο οποίο η δομή και η σωστή λειτουργία του γνωστικού συστήματος έχει καθοριστικό ρόλο στη βελτίωση και την ανάπτυξη του συνολικού γνωστικού μηχανισμού του ανθρώπου. Μέσα σε αυτό το σύνολο, υπάγονται και οι ασκήσεις και οι στρατηγικές παρέμβασης γνωστικής και συναισθηματικής ανάπτυξης, οι οποίες εκπαιδεύουν την ικανότητα των παιδιών με μαθησιακές δυσκολίες και μη, να ανταποκρίνονται καλύτερα σε όλους τους τομείς της νοημοσύνης, με αποτέλεσμα να αναπτύσσουν το εσωτερικό δυναμικό τους και να αναδομούν την τάξη τους προς το καλύτερο.

Λέξεις κλειδιά: νοημοσύνη, εγκέφαλος, ασκήσεις, στρατηγικές παρέμβασης, γνωστική ανάπτυξη, μεταγνωστική ικανότητα, συναισθηματική ανάπτυξη, ενσυναίσθηση, συναισθηματική νοημοσύνη, πυραμίδα γνώσης, πολλαπλή νοημοσύνη, γνώση, ευφυΐα.

ΒΙΒΛΙΟΓΡΑΦΙΑ

Ξενόγλωσση

- Abbott, R., & Lavretsky, H. (2013). Tai Chi and Qigong for the treatment and prevention of mental disorders. *The psychiatric clinics of North America*, 36(1), 109.
- Aben, B., Stapert, S. & Blokland, A. (2012). About the distinction between working memory and short-term memory. *Frontiers in Psychology*, 3(301), 1-9.
- Ackerman, P. L., Beier, M. E., & Boyle, M. O. (2005). "Working memory and intelligence: The same or different constructs?". *Psychological Bulletin*: 131(1), 30.
- Adams, J. B., George, F., & Audhya, T. (2006). Abnormally High Plasma Levels of Vitamin B6 in Children with Autism Not Taking Supplements Compared to Controls Not Taking Supplements. *The Journal of Alternative and Complementary Medicine*, 12(1), 59–63.
- Aki, O. (2006). Is emotional intelligence or mental intelligence more important in language learning. *J. Appl. Sci.*, 6, 66–70.
- Alchalabi, A. E., Shirmohammadi, S., Eddin, A. N., & Elsharnouby, M. (2018). FOCUS: Detecting ADHD patients by an EEG-based serious game. *IEEE Transactions on Instrumentation and Measurement*, 67(7), 1512-1520.
- Ali, Y., Mahmud, N. A., & Samaneh, R. (2015). Current advances in neurofeedback techniques for the treatment of ADHD. *Biomed. Pharma. J*, 8, 65-177.
- Almone, J. B., Li, Y., Lee, S. W. Clemenson, G. D., Deng, W. and Gage, F. H. (2014). Regulation and Function of Adult Neurogenesis: From Genes to Cognition. *Physiol. Rev.*, 94(4), 991-1026.

- Alves, S., Marques, A., Queirós, C., & Orvalho, V. (2013). LIFEisGAME Prototype: A Serious Game about Emotions for Children with Autism Spectrum Disorders. *PsychNology Journal*, 11(3), 191-211.
- Amutio, A., Franco, C., Pérez-Fuentes, M. C., Gázquez, J. J., and Mercader, I. (2015b). Mindfulness training for reducing anger, anxiety and depression in fibromyalgia patients. *Front. Psychol.*, 5, 1572.
- Archer, T. & Kostrzewa, R. (2011). Physical Exercise Alleviates ADHD Symptoms: Regional Deficits and Development Trajectory. *Neurotox Res*, 21(2), 195-209.
- Arnsten, A. F. (2009). Stress signalling pathways that impair prefrontal cortex structure and function. *Nature reviews neuroscience*, 10(6), 410-422.
- Awh, E., and Vogel, E. K., Oh, S. H. (2006). Interactions between attention and working memory. *Neuroscience*, 139(1), 201-208.
- Awh E, Jonides J. (2001). "Overlapping mechanisms of attention and spatial working memory". *Trends in Cognitive Sciences*: 5, 119–26.
- Ayano, G. (2016). Dopamine: receptors, functions, synthesis, pathways, locations and mental disorders: review of literatures. *J Ment Disord Treat*, 2(120), 2.
- Azzam, H. M., Sayyah, H., Youssef, S., Lotfy, H., Abdelhamid, I. A., Elhamed, H. A. A., & Maher, S. (2015). *Autism and vitamin D. Middle East Current Psychiatry*, 22(1), 9–14.
- Baddeley, A.D., Allen, R.J. & Hitch, G.J. (2011). Binding in visual working memory: The role of the episodic buffer. *Neuropsychologia*, 49(6), 1393–1400.
- Baddeley, A. (2010). Working memory. *Current Biology*, 20(4), 136-140.
- Baddeley, A. (2003). Working memory: looking back and looking forward. *Nature reviews neuroscience*, 4(10), 829-839.

- Baddeley, A. (2000). The episodic buffer: a new component of working memory?. *Trends in Cognitive Sciences*, 4(11), 417–423.
- Baddeley, A. D., Papagno, C. & Vallar, G. (1988). "When long-term learning depends on short-term storage". *Journal of Memory and Language*: 27(5), 586-595.
- Barchard, K.A. (2003). Does emotional intelligence assist in the prediction of academic success? *Educ. Psychol. Meas.*, 63, 840–858.
- Bar-On, R. (2010). Emotional intelligence: An integral part of positive psychology. *S. Afr. J. Psychol.*, 40, 54–62.
- Bar-On, R. (2006). The Bar-On model of emotional-social intelligence (ESI). *Psicothema*, 18, 1–28.
- Baron-Cohen, S., & Wheelwright, S. (2004). The empathy quotient: an investigation of adults with Asperger syndrome or high functioning autism, and normal sex differences. *Journal of autism and developmental disorders*, 34(2), 163-175.
- Barzegary, L., Zamini, S. (2011). The effect of play therapy on children with ADHD. *Procedia - Social and Behavioral Sciences*, 30(2011), 2216 – 2218.
- Bavelier, D. & Davidson, R. J. (2013). Brain training: Games to do you good. *Nature*, 494(7438), 425-426.
- Beaumont, R., & Sofronoff, K. (2008). A multi component social skills intervention for children with Asperger syndrome: The Junior Detective Training Program. *Journal of Child Psychology and Psychiatry*, 49(7), 743-753.
- Bender, S., & Fish, A. (2000). The transfer of knowledge and the retention of expertise: the continuing need for global assignments. *Journal of knowledge management*, 4(2), 125-137.
- Blackler, K. J. & Curby, K. M. (2004). Effects of Action Video Game Training on Visual Working Memory. *Journal of Experimental Psychology: Human Perception and Performance*, 40(5), 1992-2004.

- Blair, C., Granger, D., & Peters Razza, R. (2005). Cortisol reactivity is positively related to executive function in preschool children attending Head Start. *Child development*, 76(3), 554-567.
- Bora, B. (2015). The essence of soft skills. *International Journal of Innovative Research and Practices*, 3(12), 7-22.
- Boucenna, S., Narzisi, A., Tilmont, E., Muratori, F., Pioggia, G., Cohen, D., & Chetouani, M. (2014). Interactive technologies for autistic children: a review. *Cognitive Computation*, 6(4), 722-740.
- Bowirrat, A., Chen, T. J., Oscar-Berman, M., Madigan, M., Chen, A. L., Bailey, J. A., & Downs, B. W. (2012). Neuropsychopharmacology and neurogenetic aspects of executive functioning: Should reward gene polymorphisms constitute a diagnostic tool to identify individuals at risk for impaired judgment? *Molecular neurobiology*, 45(2), 298-313.
- Brackett, M.A.; Rivers, S.E.; Salovey, P. (2011). Emotional intelligence: Implications for personal, social, academic, and workplace success. *Soc. Personal. Psychol. Compass*, 5, 88–103.
- Brackett, M.A.; Warner, R.M.; Bosco, J.S. (2005). Emotional intelligence and relationship quality among couples. *Pers. Relationsh.*, 12, 197–212.
- Brodin, J., & Lindstrand, P. (2003). What about ICT in special education? Special educators evaluate information and communication technology as a learning tool. *European Journal of Special Needs Education*, 18(1), 71-87.
- Cabibihan, J.-J., Javed, H., Ang Jr, M., & Aljunied, S. M. (2013). Why robots? A survey on the roles and benefits of social robots in the therapy of children with autism. *International Journal of Social Robotics*, 5(4), 593–618.
- Caglio, M., Latini-Corazzini, L., D'agata, F., Cauda, F., Sacco, K., Monteverdi, S., Zettin, M., Duca, S. & Geminiani, G. (2009). Video game play changes spatial and verbal memory: rehabilitation of a single case with traumatic brain injury. *Cogn. Process*, 10(2), 195-197.

- Calvert, B. (1974). Meno's Paradox reconsidered. *Journal of the History of Philosophy*, 12(2), 143-152.
- Cerrillo-Urbina, A., García-Hermoso, A., Sánchez-López, M., Pardo-Guijarro, M., Santos Gómez, J. & Martínez-Vizcaíno, V. (2015). The effects of physical exercise in children with attention deficit hyperactivity disorder: a systematic review and meta-analysis of randomized control trials. *Child Care Health*, 41(6), 779-788.
- Chan, D. C. (2006). Mitochondria: dynamic organelles in disease, aging, and development". *Cell*, 125 (7), 1241–1252.
- Chou, C. & Huang, C. (2016). Effects of an 8-week yoga program on sustained attention and discrimination function in children with attention deficit hyperactivity disorder. *PeerJ*, 5(2017).
- Choudhury, A., Sahu, T., Ramanujam, P. L., Banerjee, A. K., Chakraborty, I., Kumar, A., & Arora, N. (2018). Neurochemicals, behaviours and psychiatric perspectives of neurological diseases. *Neuropsychiatry*, 8(1), 395-424.
- Chun, M. M., Golomb, J. D., & Turk-Browne, N. B. (2011). A taxonomy of external and internal attention. *Annual review of psychology*, 62, 73-101.
- Chun, M. M., & Turk-Browne, N. B. (2007). Interactions between attention and memory. *Current opinion in neurobiology*, 17(2), 177-184.
- Coetzer, G.H. (2016). Emotional versus Cognitive Intelligence: Which is the better predictor of Efficacy for Working in Teams? *J. Behav. Appl. Manag.*, 16, 116–133.
- Cohen, M. A., Cavanagh, P., Chun, M. M., & Nakayama, K. (2012, August). The attentional requirements of consciousness. *Trends in Cognitive Sciences*, 16(8), 411-417.

- Condon, P., Desbordes, G., Miller, W. B., and DeSteno, D. (2013). Meditation increases compassionate responses to suffering. *Psychol. Sci.*, 24, 2125–2127.
- Conway, A.R.A., Cowan, N., & Bunting, M.F. (2001). The cocktail party phenomenon revisited: The importance of working memory capacity. *Psychonomic Bulletin & Review*, 8, 331–335.
- Cumming J., Nordin S.M., Horton R., & Reynolds S. (2006). Examining the direction of imagery and self-talk on dartthrowing performance and self-efficacy. *Sport Psychologist*, 20, 257–274.
- Dalgleish, T. (2004). The emotional brain. *Nat. Rev. Neurosci.*, 5, 583–589.
- Dautenhahn, K. (2003). Roles and functions of robots in human society: Implications from research in autism therapy. *Robotica*, 21, 443-452.
- David O. Kennedy, 1. R. (2010, 07). Effects of high-dose B vitamin complex with vitamin C and minerals on subjective mood and performance in healthy males. *Psychopharmacology (Berl)*, 211 (1), 55-68.
- Davis, Katie; Christodoulou, Joanna; Seider, Scott; Gardner, Howard (2011), "The Theory of Multiple Intelligences", in Sternberg, Robert J.; Kaufman, Barry (eds.), *The Cambridge Handbook of Intelligence*, Cambridge University Press, 485–503.
- Dell'Acqua, R., Sessa, P., Jolicoeur, P., and Robitaille, N. (2006). Spatial attention freezes during the attention blink. *Psychophysiology*, 43(4), 394-400.
- Den Heijer, A., Groen, Y., Tucha, L., Fuermaier, A., Koerts, J., Lange, K., Thome, J. & Tucha, O. (2016). Sweat it out? The effects of physical exercise on cognition & behavior in ADHD. A systematic literature. *J Neural Transm*, 124(1), 3-26.
- Dennett, D.C. (2009) Multiple drafts model. *In The Oxford Companion to Consciousness*, 452–454.
- Diamond, A. (2013). Executive functions. *Annual review of psychology*, 64, 135-168.

- Diehl, J., Schmitt, L., Villano, M., & Crowell, C. (2012). The clinical use of robots for individuals with autism spectrum disorders: A critical review. *Research in Autism Spectrum Disorders*, 6(1), 249–262.
- Drigas, A. S., Angelopoulou, E., & Karabatzaki Z. (2021, 06). The Role of Working Memory and Attention in Older Workers' Learning. *International Journal of Advanced Corporate Learning*, 4-14.
- Drigas, A. S., Kokkalia, G., & Economou, A. (2021, 05). An 8-Layer Model for Metacognitive Skills in Kindergarten. *Neurology and Neurobiology*, 4(1), 2-10.
- Drigas, A. S., & Bravou, V. (2021a, 04). BCI-based games and ADHD. *Research Society and Development*, 10(4), 1-6.
- Drigas, A. S., Mitsea, E., & Mantas P. (2021, 04). Soft Skills & Metacognition as Inclusion Amplifiers in the 21st Century. *International Journal of Recent Contributions from Engineering Science & IT*, 17(4), 121-131.
- Drigas, A. S., & Mitsea, E. (2021, 03). Metacognition, Stress – Relaxation Balance & Related Hormones. *iJES*, 9(1), 4-16.
- Drigas, A. S., & Mitsea E., (2020, 11). The 8 Pillars of Metacognition. *International Journal of Recent Contributions from Engineering Science & IT (iJES)*, 15(20) 162-178.

Drigas, A. S., Dede, D. E., & Dedes S. (2020, 08). Mobile and other applications for mental imagery to improve learning disabilities and mental health. *International Journal of Computer Science Issues*, 17(4), 18-23.

Drigas, A., & Karyotaki, M. (2018, 11 08). Mindfulness Training & Assessment and Intelligence. *International Journal of Recent Contributions from Engineering, Science & IT (iJES)*, 6, 70.

Drigas, A. S., Karyotaki, M., & Skianis C. (2018, 11). An Integrated Approach to Neuro-development, Neuroplasticity and Cognitive Improvement. *International Journal of Recent Contributions from Engineering Science & IT (iJES)*, 6(3), 4-18.

Drigas, A. S., & Papoutsis, C. (2018, 05). A New Layered Model on Emotional Intelligence. *Behavioral Sciences*, 8(45), 1-17.

Drigas, A., Dourou, A. (2017a). A Review on ICT Based Applications for Intervention and Assistance of People with Memory Deficits. *International Journal of Emerging Technologies in Learning*, 8(5), 47-49.

Drigas, A., Karyotaki, M. & Skianis, C. (2017b). Success: A 9 Layered-based Model of Giftedness, *iJES*, 5(4), 1-15.

Drigas, A., & Pappas, M. A. (2017, 10 11). The Consciousness-Intelligence-Knowledge Pyramid: An 8x8 Layer Model. *International Journal of Recent Contributions from Engineering, Science & IT (iJES)*, 5(3), 14-25.

Drigas, A., Karyotaki, M., & Skianis, C. (2017, 02 01). Attentional Control and other Executive Functions. *International Journal of Emerging Technologies in Learning*, 12(3), 219-233.

- Drigas, A. S., & Papoutsis, C. (2016, 10). Games for Empathy for Sensitive Social Groups. *International Journal of Recent Contributions from Engineering Science & IT*, 4(3), 39-43.
- Drigas, A. S., & Papoutsis, C. (2015, 11). Empathy, Special Education and ICTs. *ijES*, 3(5), 37-41.
- Drigas, A., Ioannidou, R. E., Kokkalia, G. & Lytras, M. (2014a). ICTs, Mobile Learning and Social Media to Enhance Learning for Attention Difficulties. *Journal of Universal Computer Science*, 20(10), 1499-1510.
- Drigas, A. & Karyotaki, M. (2014b). Learning Tools and Applications for Cognitive Improvement, *ijEP*, 4(3). 71-77.
- Drigas, A. & Tourimpampa, A. (2014c). Processes and ICT Tools for ADHD Assessment, Intervention and Attention Training. *International Journal of Emerging Technologies in Learning*, 9(6), 20-15.
- Drigas, A. & Ioannidou, E. (2013). Special education and ICTs. *International Journal of Emerging Technologies in Learning*, 8(2), 41-47.
- Duncan, J. (1996). Cooperating brain systems in selective perception and action. In T. Inui and J. L. McClelland (Eds.), *Attention and performance 16: Information integration in perception and communication*, 549-578. Cambridge, MA: MIT Press.
- Dye, M. W., Green, C. S., & Bavelier, D. (2009b). The development of attention skills in action video game players. *Neuropsychologia*, 47(8-9), 1780-1789.
- Eisenberg, N.; Fabes, R.A.; Guthrie, I.K.; Reiser, M. (2000). Dispositional emotionality and regulation: Their role in predicting quality of social functioning. *J. Personal. Soc. Psychol.*, 78, 136–157.

- Elfenbein, H.A.; Der Foo, M.; White, J.; Tan, H.H.; Aik, V.C. (2007). Reading your counterpart: The benefit of emotion recognition accuracy for effectiveness in negotiation. *J. Nonverbal Behav.*, 31, 205–223.
- Elias MF, Robbins MA, Budge MM, Elias PK, Brennan SL, Johnston C, Nagy Z, Bates CJ. (2006). “Homocysteine, folate, and vitamins B-6 and B-12 blood levels in relation to cognitive performance: the Maine-Syracuse study.” *PsychosomMed*, 68, 547–554.
- Eysenck, H.J. (1986). The theory of intelligence and the psychophysiology of cognition. *Advances in the Psychology of Human Intelligence*, 3, 1-34.
- Fan, J., McCandliss, B. D., Fossella, J., Flombaum, J. I., and Posner, M. I. (2005). The activation of attentional networks. *Neuroimage*, 26(2), 471-479.
- Farb, N.A.; Chapman, H.A.; Anderson, A.K. (2013). Emotions: Form follows function. *Curr. Opin. Neurobiol.*, 23, 393–398.
- Feng, J., Shan, L., Du, L., Wang, B., Li, H., Wang, W., Jia, F. (2016). Clinical improvement following vitamin D3 supplementation in Autism Spectrum Disorder. *Nutritional Neuroscience*, 20(5), 284–290.
- Fix, R. L., and Fix, S. T. (2013). The effects of mindfulness-based treatments for aggression: a critical review. *Aggress. Violent Behav.*, 18, 219–227.
- Flavell JH (1979) Metacognition and cognitive monitoring: A new area of cognitive-developmental inquiry. *Am Psychol* 34, 906-911.
- Fontan-Lozano, A. et al. (2008). Molecular bases of caloric restriction regulation of neuronal synaptic plasticity. *Mol. Neurobiol.*, 38 (2), 167–177.
- Fougnie, D. (2008). The Relationship between Attention and Working Memory. *New Research on Short-Term Memory*.

- Franco, C., Mañas, I., Cangas, A., and Gallego, J. (2011). Exploring the effects of mindfulness program for students of secondary school. *Int. J. Knowl. Soc. Res.*, 2, 14–28.
- Free, C., Phillips, G., Galli, L., Watson, L., Felix, L., Edwards, P., Patel, V., & Haines, A. (2013). The Effectiveness of Mobile- Health Technology-Based Health Behaviour Change or Disease Management Interventions for Health Care Consumers: A Systematic Review. *PloS Medicine*, 10(1), e1001362.
- García-Bueno, B., Caso, J. R., & Leza, J. C. (2008). Stress as a neuroinflammatory condition in brain: damaging and protective mechanisms. *Neuroscience & Biobehavioral Reviews*, 32(6), 1136-1151.
- Gardner, H. (2006). The science of Multiple Intelligences Theory: A Response to Lynn Waterhouse. *Educational Psychologist*, 41(4), 227-232.
- Gardner, H.; Hatch, T. (1989). Educational implications of the theory of multiple intelligences. *Educ. Res.*, 18, 4–10.
- Gohm, C.L.; Corser, G.C.; Dalsky, D.J. (2005). Emotional intelligence under stress: Useful, unnecessary, or irrelevant? *Personal. Individ. Differ.*, 39, 1017–1028.
- Golan, O., Ashwin, E., Granader, Y., McClintock, S., Day, K., Leggett, V., & Baron-Cohen, S. (2010). Enhancing emotion recognition in children with autism spectrum conditions: An intervention using animated vehicles with real emotional faces. *Journal of autism and developmental disorders*, 40(3), 269-279.
- Golan, O., & Baron-Cohen, S. (2006). Systemizing empathy: Teaching adults with Asperger syndrome or high-functioning autism to recognize complex emotions using interactive multimedia. *Development and psychopathology*, 18(02), 591-617.

- Good, D. J., Lyddy, C. J., Glomb, T. M., Bono, J. E., Brown, K. W., Duffy, M. K., & Lazar, S. W. (2016). Contemplating mindfulness at work: An integrative review. *Journal of management*, 42(1), 114-142.
- Gouda, S, Luong, MT, Schmidt, S and Bauer, J. (2016). Students and Teachers Benefit from Mindfulness-Based Stress Reduction in a School-Embedded Pilot Study. *Front. Psychol.*, 7, 590.
- Grossman, P. (2015). Mindfulness: awareness informed by an embodied ethic. *Mindfulness*, 6, 17–22.
- Grzybowska, K., & Łupicka, A. (2017). Key competencies for Industry 4.0. *Economics & Management Innovations*, 1(1), 250-253.
- Gutiérrez-Cobo, M.J.; Cabello, R.; Fernández-Berrocal, P. (2016). The relationship between emotional intelligence and cool and hot cognitive processes: A systematic review. *Front. Behav. Neurosci.*, 10, 101.
- Hannibal, K. E., & Bishop, M.D. (2014). Chronic stress, cortisol dysfunction, and pain: a psychoneuroendocrine rationale for stress management in pain rehabilitation. *Physical therapy*, 94(12). 1816-1825.
- Heatherton, T. F. (2011). Neuroscience of self and self-regulation. *Annual review of psychology*, 62, 363-390.
- Heim, M. (1995). The design of virtual reality. *Body Soc.*, 1, 65–77.
- Hey, J. (2004). The data, information, knowledge, wisdom chain: the metaphorical link. *Intergovernmental Oceanographic Commission*, 26.
- Hogeveen, J.; Salvi, C.; Grafman, J. (2016). ‘Emotional Intelligence’: Lessons from Lesions. *Trends Neurosci.*, 39, 694–705.
- Holmes, E.A., Deerpse, C., Fairburn, C.G., Wallace- Hadrill, S.M.A., Bonsall, M.B., Geddes, J.R., & Goodwin, G.M. (2011). Mood stability versus mood instability in bipolar disorder: A possible role for emotional mental imagery. *Behaviour Research and Therapy*, 49, 707-713.

- Hoppins, S. Lackner, L. Nunnari, J. (2007). The machines that divide and fuse mitochondria. *Annu. Rev. Biochem.*, 76, 751–780.
- Ibrayeva, A. and Bonaguidi, M. A. (2015). Pushing and pulling on adult neural stem cells. *Cell Stem Cell*, 16, 451-452.
- Izard, C.E. (1993). Four systems for emotion activation: Cognitive and noncognitive processes. *Psychol. Rev.*, 100, 68–90.
- Kabat-Zinn, J., Lipworth, L., & Burney, R. (1985). The clinical use of mindfulness meditation for the self-regulation of chronic pain. *Journal of Behavioral Medicine*, 8(2), 163–190.
- Kaufman, J. C., Plucker J.A. (2011). Intelligence and creativity. In R.J. Sternberg, S.B. Kaufman (Eds), *The Cambridge handbook of intelligence* (771-783). Cambridge University Press.
- Kentridge, R.W. (2011) *Attention without awareness: a brief review. In Attention: Philosophical and Psychological Essays* (Mole, C. et al., eds), Oxford University Press, 228–246.
- Kleijn, W. C., van der Ploeg, H. M., & Topman, R. M. (1994). Cognition, study habits, test anxiety, and academic performance. *Psychological Reports*, 75, 1219-1226.
- Knott, A. B. et al., (2008). Mitochondrial fragmentation in neurodegeneration. *Nat. Rev. Neurosci.*, 9 (7), 505–518.
- Krishnakumar, D., Hamblim, M.R., & Lakshmanan, S. (2015). Meditation and yoga can modulate brain mechanisms that affect behavior and anxiety-A modern scientific perspective. *Ancient science*, 2(1), 13.
- Kunnanatt, J.T. (2004). Emotional intelligence: The new science of interpersonal effectiveness. *Hum. Resour. Dev. Q.*, 15, 489–495.
- Lang, P.J. (1994). The varieties of emotional experience: A meditation on James-Lange theory. *Psychol. Rev.*, 101, 211–221.

- Lewis, N., & Neill, S. (2001). Portable computers for teachers and support services working with pupils with special educational needs: An evaluation of the 1999 United Kingdom Department for Education and Employment scheme. *British Journal of Educational Technology*, 32(3), 301–315.
- Libbrecht, N.; Lievens, F.; Carette, B.; Côté, S. (2014). Emotional intelligence predicts success in medical school. *Emotion*, 14, 64–73.
- Lim, C. G., Lee, T. S., Guan, C., Fung, D. S. S., Zhao, Y., Teng, S. S. W., & Krishnan, K. R. R. (2012). A brain-computer interface based attention training program for treating attention deficit hyperactivity disorder. *PloS one*, 7(10), e46692.
- Lim, C. G., Lee, T. S., Guan, C., Fung, D. S., Cheung, Y. B., Teng, S., & Krishnan, K. R. (2010). Effectiveness of a brain-computer interface based programme for the treatment of ADHD: a pilot study. *Psychopharmacol Bull*, 43(1), 73-82.
- Liu, J., Liu, X., Xiong, X.-Q., Yang, T., Cui, T., Hou, N.-L., Li, T.-Y. (2017). Effect of vitamin A supplementation on gut microbiota in children with autism spectrum disorders - a pilot study. *BMC Microbiology*, 17(1).
- Lopes, P.N.; Brackett, M.A.; Nezlek, J.B.; Schütz, A.; Sellin, I.; Salovey, P. (2004). Emotional intelligence and social interaction. *Personal. Soc. Psychol. Bull.*, 30, 1018–1034.
- López-González, L., and Oriol, X. (2016). The relationship between emotional competence, classroom climate and school achievement in high school students. *Cult. Educ.*, 28, 130–156.
- Love, T. M. (2014). Oxytocin, motivation and the role of dopamine. *Pharmacology Biochemistry and Behaviour*, 119, 49-60.
- Lövheim, H. (2012). A new three-dimensional model for emotions and monoamine neurotransmitters. *Medical hypotheses*, 78(2), 341-348.
- Lozano, J., Ballesta, J., & Alcaraz, S. (2011). Software for Teaching Emotions to Students with Autism Spectrum Disorder. *Comunicar*, 36, 139-148.

- Lubart, T. I., & Sternberg, R. J. (1995). An investment approach to creativity: Theory and data. In S. M. Smith, T. B. Ward, & R. A. Finke (Eds.), *The creative cognition approach*, 269–302. Cambridge, MA: MIT Press.
- MacArthur, C. (1996). Using Technology to Enhance the Writing Processes of Students with Learning Disabilities. *Journal of Learning Disabilities*, 29(4), 344-354.
- Marques-Aleixo, I. et al., (2012). Physical exercise as a possible strategy for brain protection: evidence from mitochondrial-mediated mechanisms. *Prog. Neurobiol.*, 99 (2), 149–162.
- Maslow, A. H. (1962). Some basic propositions of a growth and self-actualization psychology. *Perceiving, behaving, becoming: A new focus for education*, 34-49.
- Mattson, M. P. Gleichmann, M. and Cheng, A. (2008). Mitochondria in neuroplasticity and neurological disorders. *Neuron*, 60 (5), 748 – 766.
- Mayer, J.D.; Roberts, R.D.; Barsade, S.G. (2008). Human abilities: Emotional intelligence. *Annu. Rev. Psychol.*, 59, 507–536.
- Mayer, J.D.; Salovey, P.; Caruso, D.R.; Sitarenios, G. (2003). Measuring emotional intelligence with the MSCEIT V2. 0. *Emotion*, 3, 97–105.
- Mayer, J.D.; Salovey, P.; Caruso, D.R.; Sitarenios, G. (2001). Emotional intelligence as a standard intelligence. *Emotion*, 1, 232–242.
- Mayer, J.D., DiPaolo, M., & Salovey, P. (1990). Perceiving the affective content in ambiguous visual stimuli: A component of emotional intelligence. *Journal of Personality Assessment*, 50, 772-781.
- Mayer, J.D., & Volanth, A.J. (1985). Cognitive involvement in the emotional response system. *Motivation and Emotion*, 9, 261-275.

- Mazahery, H., Camargo, C., Conlon, C., Beck, K., Kruger, M., & Hurst, P. V. (2016). Vitamin D and Autism Spectrum Disorder: A Literature Review. *Nutrients*, 8(4), 236.
- McCann, R.A., Armstrong, C.M., Skopp, N.A., Edwards- Stewart, A., Smolenski, D.J., June, J.D., Metzger-Abamukong, M., & Reger, G.M. (2014). Virtual reality exposure therapy for the treatment of anxiety disorders: An evaluation of research quality. *Journal of Anxiety Disorders*, 28, 625-631.
- McConnell, A. E., Martin, J. E., Juan, C. Y., Hennessey, M. N., Terry, R. A., el-Kazimi, N. A., ... & Willis, D. M. (2013). Identifying nonacademic behaviors associated with postschool employment and education. *Career Development and Transition for Exceptional Individuals*, 36(3), 174-187.
- McCorry, L. K. (2007). Physiology of the autonomic nervous system. *American journal of pharmaceutical education*, 71(4).
- McGrew, K.S. (2009). CHC theory and the human cognitive abilities project: Standing on the shoulders of the giants of psychometric intelligence research. *Intelligence*, 37, 1–10.
- Megson, M. (2000). Is autism a G-alpha protein defect reversible with natural vitamin A? *Medical Hypotheses*, 54(6), 979–983.
- Mestre, J.M.; MacCann, C.; Guil, R.; Roberts, R.D. (2016). Models of cognitive ability and emotion can better inform contemporary emotional intelligence frameworks. *Emot. Rev.*, 8, 322–330.
- Mintz, R., & Litvak, S. (2001). 3D-Virtual Reality in Science Education: An Implication for Astronomy Teaching. *Jl. Of Computers in Mathematics and Science Teaching. Association for the Advancement of Computing in Education (AACE)*, 20, 293-305.
- Moica, T., Gligor, A., & Moica, S. (2016). The relationship between cortisol and the hippocampal volume in depressed patients-a MRI pilot study. *Procedia Technology*, 22, 1106-1112.

- Mohr, D.C., Burns, M.N., Schueller, S.M., Clarke, G., & Klinkman, M. (2013). Behavioral intervention technologies: evidence review and recommendations for future research in mental health. *General Hospital Psychiatry*, 35, 332-338.
- Morgan, H. (1996). An analysis of Gardner's theory of multiple intelligence. *Roeper Rev.*, 18, 263–269.
- Morganti, F., Gaggioli, A., Castelnovo, G., Bulla, D., Vettorello, M., & Riva, G. (2003). The Use of Technology-Supported Mental Imagery in Neurological Rehabilitation: A Research Protocol. *CyberPsychology & Behavior*, 6, 421–427.
- Munroe, K.J., Giacobbi, P.R., Hall, C., Weinberg, R. (2000). The Four Ws of Imagery Use: Where, When, Why, and What. *The Sport Psychologist*, 14, 119-137.
- Naghavi, H. R., & Nyberg, L. (2005). Common fronto-parietal activity in attention, memory, and consciousness: shared demands on integration. *Consciousness and cognition*, 14(2), 390-425.
- Newberg, A. B., & Iversen, J. (2003). The neural basis of the complex mental task of meditation: neurotransmitter and neurochemical considerations. *Medical hypotheses*, 61(2), 282-291.
- Notarius, C.I., & Levenson, R.W. (1979). Expressive tendencies and physiological response to stress. *Journal of Personality and Social Psychology*, 37, 1204-1201.
- Park, K., Kihl, T., Park, S., Kim, M. J., & Chang, J. (2019). Fairy tale directed game-based training system for children with ADHD using BCI and motion sensing technologies. *Behaviour & Information Technology*, 38(6), 564-577.
- Parsons, T.D., & Rizzo, A.A. (2008). Affective outcomes of virtual reality exposure therapy for anxiety and specific phobias. A meta-analysis. *Journal of Behavior Therapy and Experimental Psychiatry*, 39, 250-261.
- Petersen, S. E., & Posner, M. I. (2012). The attention system of the human brain: 20 years after. *Annual review of neuroscience*, 35, 73-89.

- Qian, X., Loo, B. R. Y., Castellanos, F. X., Liu, S., Koh, H. L., Poh, X. W. W., Krishnan, R., Fung, D., Chee, M. W., Guan, C., Lee, T. S., Lim, C. G., & Zhou, J. (2018). Brain-computer-interface-based intervention re-normalizes brain functional network topology in children with attention deficit/hyperactivity disorder. *Translational psychiatry*, 8(1), 1-11.
- Rezvani, A.; Chang, A.; Wiewiora, A.; Ashkanasy, N.M.; Jordan, P.J.; Zolin, R. (2016). Manager emotional intelligence and project success: The mediating role of job satisfaction and trust. *Int. J. Proj. Manag.*, 34, 1112–1122.
- Rohani, D. A., & Puthusserypady, S. (2015). BCI inside a virtual reality classroom: a potential training tool for attention. *EPJ Nonlinear Biomedical Physics*, 3, 1-14.
- Rosete, D.; Ciarrochi, J. (2005). Emotional intelligence and its relationship to workplace performance outcomes of leadership effectiveness. *Leadersh. Organ. Dev. J.*, 26, 388–399.
- Saito, S. (2001). The phonological loop and memory for rhythms: An individual differences approach. *Memory*, 9(4-6), 313-322.
- Salovey, P., Mayer, J., Caruso, D. (2004). Emotional Intelligence: Theory, Findings, and Implications. *Psychological Inquiry*, 197–215.
- Samadi, M. (2002). Metacognitive knowledge and mathematical problem solving: The role of gender and performance achievement. *Advances in Cognitive Science*, 4, 42-50.
- Scarr, S. (1985). An author's frame of mind [Review of Frames of Mind by H. Gardner]. *New Ideas in Psychology*, 3, 95-100.
- Schmitt, J. A. J., Wingen, M., Ramaekers, J. G., Evers, E. A. T., & Riedel, W. J. (2006). Serotonin and human cognitive performance. *Current pharmaceutical design*, 12(20), 2473-2486.
- Schnack, H. G., Haren, N. E., Brouwer, R. M., Evans, A., Durston, S., Boomsma, D. I., Hulshoff Pol, H. E. (2015, 06). Changes in Thickness and Surface Area of the

Human Cortex and Their Relationship with Intelligence. *Cerebral Cortex*, 25(6), 1608-1617.

School, H. M. (2016, August 3). *A workout for your brain*. Ανάκτηση 04 05, 2021, από Harvard Health Publishing: <https://www.health.harvard.edu/mind-and-mood/a-workout-for-your-brain>

Semple, RJ, Lee, J, Rosa, D, Miller, LF. (2010). A randomized trial of mindfulness-based cognitive therapy for children: Promoting mindful attention to enhance social-emotional resiliency in children. *Journal of Child and Family Studies.*, 19, 218–229.

Sergent, C., Baillet, S., and Dehaene, S. (2005). Timing of the brain events underlying access to consciousness during the attentional blink. *Nature Neuroscience*, 8(10), 1391-1400.

Shalev, I., Moffitt, T. E., Sugden, K., Williams, B., Houts, R. M., Danese, A., & Caspi, A. (2013). Exposure to violence during childhood is associated with telomere erosion from 5 to 10 years of age: a longitudinal study. *Molecular psychiatry*, 18(5), 576-581.

Shohamy, D., & Adcock, R. A. (2010). Dopamine and adaptive memory. *Trends in cognitive sciences*, 14(10), 464-472.

Silver, M., & Oakes, P. (2001). Evaluation of a new computer intervention to teach people with autism or Asperger syndrome to recognize and predict emotions in others. *Autism*, 5(3), 299-316.

Singh, K. (2016). Nutrient and stress management. *J Nutr Food Sci*, 6(528), 2.

Skaalvik, E.M. (1997). Self-enhancing and self-defeating ego orientation: relations with task and avoidance orientation, achievement, self – perceptions and anxiety. *Journal of Educational Psychology*, 89(1), 71 – 81.

- Sohlberg, M. M., & Mateer, C. A. (1987). Effectiveness of an attention-training program. *Journal of clinical and experimental neuropsychology*, 9(2), 117-130.
- Steenbergen, L., Sellaro, R., Stock, A. K., Beste, C., & Colzato, L. S. (2015). Action video gaming and cognitive control: Playing first person shooter games is associated with improved action cascading but not inhibition. *Plos One Journals*, 10(12), 1-15.
- Steiner, Naomi J., et al. (2014, 01). Neurofeedback and Cognitive Attention Training for Children with Attention-Deficit Hyperactivity Disorder in Schools. *Journal of Developmental & Behavioral Pediatrics*, 35(1), 18–27.
- Steiner, Naomi J., et al. (2011, 05 11). Computer-Based Attention Training in the Schools for Children With Attention Deficit/Hyperactivity Disorder: A Preliminary Trial. *Clinical Pediatrics*, 50(7), 615–622.
- Sternberg, R. J. (2000, 07 21). The Holey Grail of General Intelligence. *Science*, 399-401.
- Sternberg, R.J., & Smith, C. (1985). Social intelligence and decoding skills in nonverbal communication. *Social Cognition*, 3, 168-192.
- Stopczynski, A., Stahlhut, C., Petersen, M.K., Larsen, J.E., Jensen, C.F., Ivanova, M.G., Andersen, T.S., & Hansen, L.K. (2013). Smartphones as pocketable labs: Visions for mobile brain imaging and neurofeedback. *International Journal of Psychophysiology*, 91, 54–66.
- Sungkarat, S., Boripuntakul, S., Kumfu, S., Lord, S. R., & Chattipakorn, N. (2018). Tai Chi improves cognition and plasma BDNF in older adults with mild cognitive impairment: a randomized controlled trial. *Neurorehabilitation and neural repair*, 32(2), 142-149.

- Tanaka, J. W., Wolf, J. M., Klaiman, C., Koenig, K., Cockburn, J., Herlihy, L., ... & Kaiser, M. D. (2012). The perception and identification of facial emotions in individuals with autism spectrum disorders using the Let's Face It! Emotion Skills Battery. *Journal of Child Psychology and Psychiatry*, 53(12), 1259-1267.
- Thorndike, E.L. (1920). Intelligence and its uses. *Harper's Magazine*, 140, 227-235.
- Treves, A. and Rolls, E. T. (1991). What determines the capacity of autoassociative memories in the brain?. *Network*, 2, 371–397.
- Trindade, J., Fiolhais, C., & Almeida, L. (2002). Science learning in virtual environments: a descriptive study. *British Journal of Educational Technology*, 33, 471–488.
- Van den Bussche, E. et al. (2010) The relation between consciousness and attention: An empirical study using the priming paradigm. *Conscious. Cogn.*, 19, 86–97.
- Veenman, M. V., Van Hout-Wolters, B. H., & Afflerbach, P. (2006). Metacognition and learning: Conceptual and methodological considerations. *Metacognition and learning*, 1(1), 3-14.
- Wadlinger, H. A., & Isaacowitz, D. M. (2011). Fixing our focus: Training attention to regulate emotion. *Personality and Social Psychology Review*, 15(1), 75-102.
- Waterhouse, L. (2006). "Inadequate Evidence for Multiple Intelligences, Mozart Effect, and Emotional Intelligence Theories ". *Educational Psychologist*, 41(4), 247–255.
- Wolf, J. M., Tanaka, J. W., Klaiman, C., Cockburn, J., Herlihy, L., Brown, C., ... & Schultz, R. T. (2008). Specific impairment of faceprocessing abilities in children with autism spectrum disorder using the Let's Face It! skills battery. *Autism Research*, 1(6), 329-340.

- Won, E., & Kim, Y. K. (2016). Stress, the autonomic nervous system, and the immunekynurenine pathway in the etiology of depression. *Current neuropharmacology*, 14(7), 665-673.
- Wong, D. L., Tai, T. C., Wong-Faull, D. C., Claycomb, R., Meloni, E. G., Myers, K. M., ... & Kvetnansky, R. (2012). Epinephrine: A short-and long-term regulator of stress and development of illness. *Cellular and molecular neurobiology*, 32(5), 737-748.
- Wu, S., & Spence, I. (2013). Playing shooter and driving videogames improves top-down guidance in visual search. *Attention, Perception, & Psychophysics*, 75(4), 673-686.
- Zeleny, M. (2005). Knowledge-information autopoietic cycle: towards the wisdom systems. *International Journal of Management and Decision Making*, 7(1), 3-18.
- Zenner, C., Herrnleben-Kurz, S., and Walach, H. (2014). Mindfulness-based interventions in schools—a systematic review and meta-analysis. *Front. Psychol.*, 5, 603.
- Zhao, C. Deng, W. and Gage, F. H. (2008). Mechanisms and functional Implications of adult neurogenesis. *Cell*, 132, 645-660.