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Amygdala Scripts, Hippocampus, Mind, Brain, and MGBA Roles in Stress, Health, Longevity and Life Quality of Humans

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Abstract: Roles of Amygdala Scripts, Hippocampus, Mind, Brain, and MGBA in Stress, Health, Longevity and Life Quality of Humans are very important. Mind, like a CEO of a company, can bring success or destruction to human health because it is the decision maker.

I. INTRODUCTION

In the literature there is no clear and scientific definition of mind [1] . In this paper the author extends author's earlier definitions of mind [2] [3] providing roles of mind (Amygdala Scripts and Hippocampus memories) and brain in health, longevity and life quality that are extremely crucial. Who is the decision maker or CEO (Chief Executive Officer) of a human (Mind, brain, heart or God)? Based on scientific evidence, the mind is the decision maker. The mind can avoid or heal diseases including cancer and heart disease [4] . The mind is the decision maker for a human and it can bring success or destruction. The human mind is the decision maker for so many factors as shown in Fig. 1.

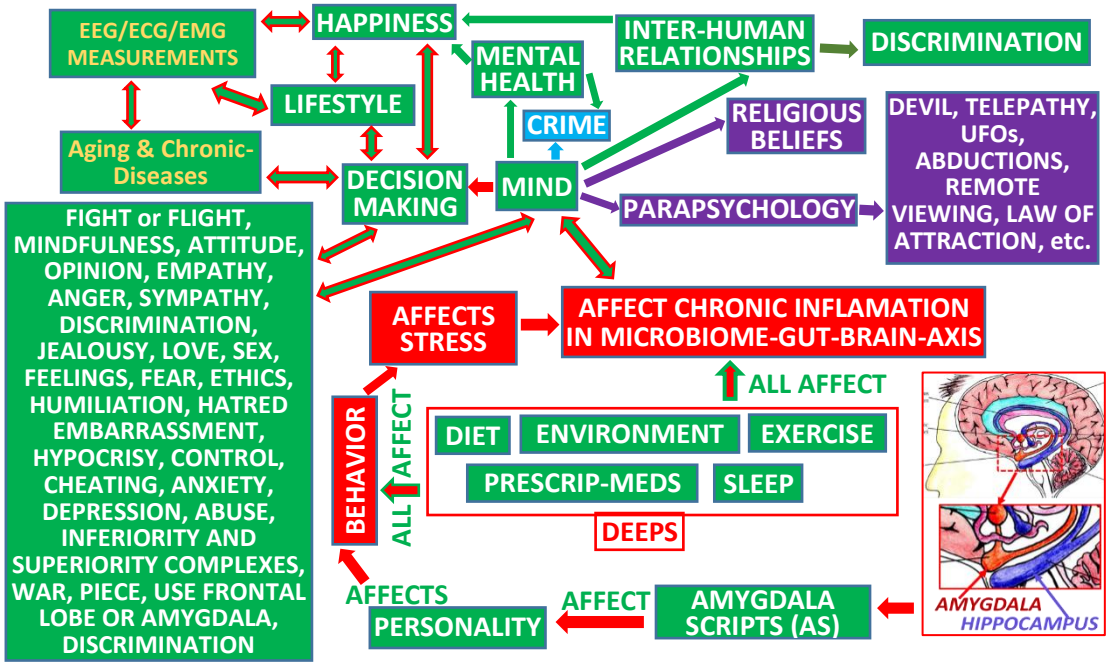

Fig. 1 *Model of mind affecting self-management and is affected by neural communication within microbiome-gut-brain-axis. DEEPS can be controlled but the AS are almost impossible to control.*

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Some of the decision-making factors are DEEPS, parapsychology, religious beliefs, relationships, and crime. The decision making for several factors is shown in Fig. 1. DEEPS, defined in Fig.1, has a profound effect on health, disease and longevity.

As shown in Fig. 2, childhood memories stored in amygdala called Amygdala Scripts (AS) and hippocampus cannot be changed (as seen in Figs. 2 and 3). The mind or personality of a human, affected by AS and Hippocampus Memories (HM), is crucial for Health, Longevity, Life Quality and interhuman relationships.

II. AMYGDALA SCRIPTS AND HIPPOCAMPUS MEMORIES AFFECTING MIND

During the early beginning of life, nature developed the amygdala as a defense response mechanism for animals. The insulae, the seat of social emotions, send pain messages to the amygdala in response to social failures. The pattern recognition responses of the amygdala are incredibly subtle. A phenomenon called Long-Term Potentiation (LTP), is a process by which connections between neurons become stronger with frequent activation. LTP is thought to be a way in which the brain changes in response to experience, and thus may be a mechanism underlying learning and memory. LTP grants a lifelong memory to the amygdala. LTP has been involved in hippocampus, cortex, amygdala, and cerebellum [5] .

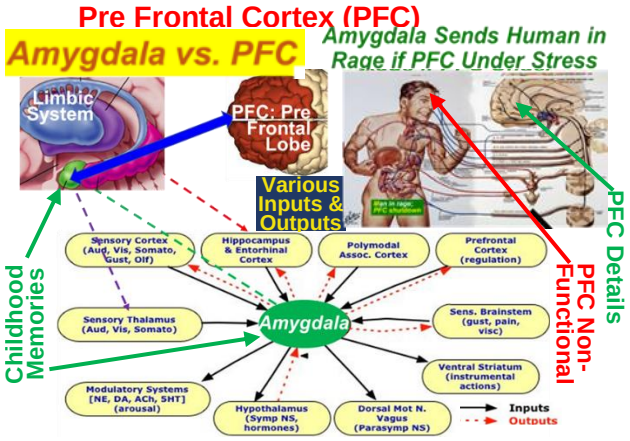

Fig. 2 *Childhood memories stored in amygdala, called Amygdala Scripts (AS). Mind is based on information stored in AS and hippocampus.*

The amygdala supports the recognition of emotions in others. The amygdala draws your attention to emotionally significant signals. The prefrontal regions have powerful inhibitory circuits, which quiet the amygdala. The amygdala contributes significantly to anger, fear, grief, envy and jealousy and plays a pivotal role in inflammation-related Depression and Anxiety Disorder (DAD) [6] . The amygdala is located in a structure in the medial temporal lobe of the brain, and it begins developing in the early stages of an embryo and is fully formed by the 15th week of gestation in humans. The amygdala is important for emotional processing, stress responsiveness, and mood pathophysiology. It also contains many receptors for hormones such as oxytocin, which are elevated during pregnancy and postpartum. The amygdala may be especially sensitive to early life adversity. Some studies have found associations between prenatal stress and amygdala volume, and others have found that maternal depression during pregnancy can affect the amygdala's volume and function. For example, one study found that maternal pregnancy-related anxiety was associated with sexually dimorphic alterations in the amygdala volume of 4-year-old children.

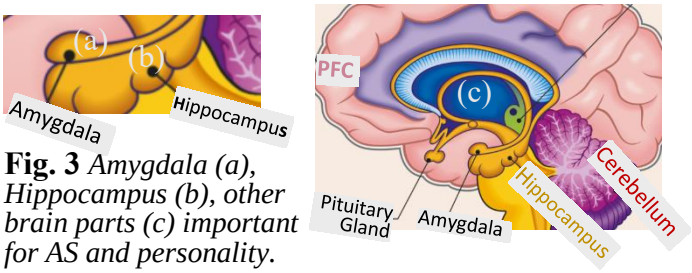

Fig. 3 *Amygdala (a), Hippocampus (b), other brain parts (c) important for AS and personality.*

Understanding amygdala scripts (AS) and early memories help (a) sleep better, (b) solve personality and psychological problems, (c) understand social behavior or understand other issues and (d) self-management for better health through stress management. Discovering one's AS can help solve several health problems. AS can be used to explain different theories/concepts of the mind

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because mind is leader for whatever humans do. The mind is influenced by AS. Emotion-processing limbic system affects moral decision making. Brain's role?

III. MIND AND BRAIN ROLES IN HEALTH, LONGEVITY, LIFE MATTERS AND LIFE HAPPENINGS

When mind and brain are not on the same page, stress is the result. The brain's main goal is survival, and it does not listen to the mind if the mind is involved in counter survival activities. However, the brain can attempt survival by raising blood pressure. The mind, affected by Amygdala Scripts (AS) and Hippocampus Memories (HM), is responsible for what a human does in life. The mind follows AS and HM (also known as childhood memories), but the brain's focus is on human survival. The mind can generate stress and if the stress threatens survival, the brain will act through the immune system and release of enzymes [7] . However, if the mind's actions are too dangerous, the brain can't do anything. Such a situation leads to diseases, and one must consult medical professionals.

As shown in Fig. 3, the human mind, as a decision maker, is based on data stored in AS and HM. The brain develops an algorithm of danger, survival strategies and other similar conditions for survival. The mind is part of the invisible, transcendent world of thought, feeling, attitude, decision, belief and imagination. If the mind does not listen to the brain, human life is in danger.

III. EXAMPLES OF BRAIN AND MIND ROLES IN LIFE AND HEALTH IV.

Recently, the use of MUSE-2 EEG headset has been discussed to study the following health conditions [8] :

1. Breast/Prostate Cancers and Heart Attack, **2.** Depression/Stress and Survival Phases, **3.** Human Mind, as Decision Maker, is Crucial for Health and Longevity, **4.** Longevity of humans, **5.** DEEPS (defined in Fig. 1), Amygdala Scripts and Neurogenesis, **6.** PFC, Testosterone, Stress and Anxiety, **7.** Chronic Stress and Childhood Memories, **8.** Female brain, **9.** An Angry Person's Mind, **10.** Creative Person with Difficult Amygdala Scripts, **11.** Consciousness Relates to Mind, **12.** God as Algorithms Based on Data Generated in Believer's Mind, **13.** Left/Right Hemispheres of Brain, **14.** Charity Curbs Creativity, **15.** Current Healthcare Seems to Focus on Treating the Symptoms not the Cause, **16.** Chronic Inflammation Causes Several Chronic Diseases, **17.** Activation of Sleeping Stem Cells, **18.** Age-related Cognitive Impairment of PFC (Pre-Frontal-Cortex), **19.** Amygdala Scripts Role in Elderly Health, **20.** Efficacy of Exercise, Yoga, and Hand/Foot/Face Reflexology, and **21.** Research-Proven Benefits of Herbs.

More Examples of Brain and Mind Roles in Life and Health:

22. ***Some Men Like Women Jokes:*** Some people enjoy sexist humor and accept it as inoffensive which is questionable. For example, some men who like women jokes may have problems with their partners or may have complex Amygdala Scripts (AS) and Hippocampus Memories (HM) [9] . While they do that, they may forget equal rights of sexes. This may be more common among male-dominant societies. Religious views may play a role in such cases. Can the jokes that men like indicate other problems or complexes in their life? Human assertions and jokes may reveal secrets of personalities and psychological problems the men may have.

23. ***Women Live Longer:*** Women cry more as they seem to be in light form of anxiety most of the time. However, they live longer than men even during severe famines and epidemics [11] . They survive better in stressful situations than men because their brains are more active. The fact that women's brains are more active is that they find ways to survive. The downside for women's blood used more in the brain than the blood in other parts of their body which, in older age, may be causing more joint and other body problems than men.

24. ***Laughing Reduces Stress:*** The minorities laugh more because they have learned through experience that laughing reduces stress. This shows that minorities are under stress. It has been proven scientifically that laughing reduces stress [12] [13] .

25. ***Females Ovulating Together:*** If two females (human or mammals) live together under one roof, they start ovulating together as the ovulation is affected by social family environment and stress [14] . Stress generates inflammation in MGBA (Microbiome Gut Brain Axis), in the Brain, knees & other

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joints, ureter, arteries, and vagus nerve. Anus inflammation can be checked by touching the anus with the middle finger of left hand.

26. ***Mating Partner Selection:*** Who selects the mating partner? Sexual selection and the ascent are done by women [15] . In most of the animal world, the mating partner is selected by the female. The criteria used by the female in the animal world to select the mating partner is strong and healthy partner that is needed for better offspring [16] . The pre-mating selection is determined by the evolution process. What about humans? It seems also good for offspring if the decision of partner selection is made by the woman. As healthy females have higher rates of cerebral blood flow than males, women are better in multitasking. Thus, Female Mind (FM) is defined as CM with more active prefrontal and limbic regions. This difference seems to be related to the life of early humans. Research shows that 7-8 parts of the female brain are active even during the sleep but, for men 3-4 parts are active all the time [17] [18] . However, in male dominant cultures (religious/others), such decisions are made mostly by males which is not backed by science.

27. Healing, Health & Happiness: Healing can lead to good health and happiness. Stress & chronic inflammation can lead to health problems. Meditation (yoga, reflexology, exercise, socialization using mindfulness), food, herbs (kalonji, coconut, curcumin, hemp, ajwain, fennel, etc.), chemicals, activating the body's self-healing ability [3] .

28. Creativity and Anxiety Phases: Humans that go through difficult environments and survive become very creative. Such humans can handle anxiety anytime, anywhere. The author of this paper went through such circumstances and survived successfully. The author as a doctoral student, during 1974 – 83 at (Rheinische Techniche Hochschule) Aachen, Germany. Dr. Sashka Alexandrova, from Bulgaria, a postdoc at RWTH, "You are a positive hero as you, as a doctoral student, have questioned part of IBM (Yorktown Heights) research on intrinsic electron and hole traps in MOS (Metal Oxide Semiconductor) structures [19] . Creativity and anxiety have been and are part of the author's very creative approach even today.

29. Amygdala and Hippocampus Driven Diet: As amygdala and hippocampus, as shown in Fig. 3, relate to childhood memories, diets based on childhood memories could be very good or bad. The living habits may be very difficult to change. Discovering, understanding and trying to modify living habits can help use a healthy diet that can help live longer [20] .

30. Concept of God: Does it exist only in the mind of believers? Or maybe it exists in the mind of a person who believes in God. If God exists, why does God need prophets to convey his message to humans? While the prophets physically existed, it seems that the concept of God existed only in their minds.

31. Massage Bed: A massage bed can help with a better flow of lymphatic fluids [21] . It may also help treat ear infections by removing the blockage in the ear canal. It may also avoid blockage of small blood cells which can lead to blockage of bigger blood vessels.

32. Mass-Shooter Algorithm: The state of mind of a mass-shooter can be measured by making EEG system (MUSE-based for example) part of the gun and the related algorithm (based on mass shooter mind) can be used to shut off the gun if the mass-shooter mind, indicating killing intentions, is detected [22] . The automatic guns could be equipped with mass-shooter algorithms such that if mass-shooter mind, constantly checked by MUSE-2 EEG sensor, decides to shoot, the gun could be disabled (made unshootable). Based on signals detected from mass-shooter brain the smart-gun could be disabled. Smartphones owned by the victim and shooter will collect the data if they are equipped with EEG detection systems.

33. Rapist Algorithm: The above ideas [22] can also be applied for brain/mind of a rape-victim equipped brainwaves data that the female brain generates. Because a female brain is more active than a male brain, a rape algorithm can be developed using signals from a female brain. When a female brain reaches a threshold the smartphone of female victim can call police before the rape occurs.

34. Predicting Personality of Dangerous Humans: Humans who have gone through life-threatening circumstances and survived have learned how to survive in dangerous environments. By reading the faces and eye movements of criminals they can smell and sense the danger of surviving. They can also read into talking styles and read into the minds of people around them. Education level predictions using writing/talking skills and quality of knowledge can be guessed. The challenge is to develop extended mind-reading algorithms based on EEG/EMG data measured along MGBA. It is also important to develop a broader definition of the human mind.

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35. Broader Definition of Mind: Mind is an algorithm based on EEG/EMG data generated along MGBA (mind's broader definition). Based on mind's broader-definition and algorithms, it is responsible for many human factors including attitude, opinion, empathy, sympathy, anger, hatred, discrimination, ego, jealousy, love, sex, humiliation, embarrassment, ethics, feelings, hypocrisy, cheating, fear, anxiety, depression, abuse, control, inferiority & superiority complexes, etc. Gut bacteria communicating with the brain through neurotransmitters along MGBA also contribute to mind.

Normal inflammation is body's self-healing response to kill damaging agents and is crucial for survival, particularly to cope with acute inflammation during our reproductive years. The key to successful aging and longevity, for all ages, is to decrease chronic inflammation, by use of black seed oil [23] , without compromising an acute response when exposed to pathogens. This is because in later life, chronic inflammation can lead to several chronic diseases such as atherosclerosis, type 2 diabetes, Alzheimer's disease, multiple sclerosis, and osteoporosis. The only area of brain where neurogenesis (ability to divide to make new cells) continues throughout life is the hippocampus, an area essential to memory encoding and storage. Neurogenesis increases by learning, exercise and sex but decreases with stress, sleep deprivation and aging. Mind can affect aging through controlling stress. The slowdown of biological aging by slowing shortening of DNA telomere through diet, exercise and good sleep is possible. Complete Mind (CM) controls diet, exercise, and good sleep.

36. Roles of Human PFC: When humans are under stress their PFC is partially or fully shutdown. As seen in Fig. 4, another factor affecting human behavior and longevity is their upbringing (effects of amygdala and hippocampus). An emotional upbringing, typical of religious, conservative and old-fashioned people.

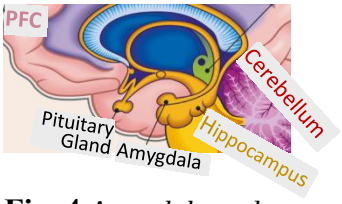

Fig. 4 *Amygdala and Hippocampus affect human mind.*

37. Typically, Children Study Subjects Different from Their Parents: Although the brought-up of most children makes them stronger around the expertise of their parents, they study areas different to those of their parents. They want to show their own leadership area and not in their parents' area. For example, Mr. Dan Black's son, Derek Black, left his father's racist hatred group [24] .

38. Racial Tensions in USA: Are Amygdala Scripts (AS) and HM of races playing a major role? Most whites don't understand discrimination as they don't confront one. White AS (WAS) seem to give whites a feeling of superiority knowingly or not knowingly. For example, early white immigrants did not have to get immigration status to stay and work in USA. Black Americans and immigrants from non-white regions have historically been treated differently. As by 2050s, whites may be in minority, WAS may be leading to 'white nationalism'.

39. Cancer Return After Chemotherapy: Cancer is caused by chronic inflammation that is caused by an unhealthy lifestyle. SDEEP (sleep, diet, environment, exercise and prescription medicine) affects stress. Thus, if after chemotherapy the lifestyle isn't changed cancer can return [4] . Mind plays a role in this decision.

40. Innovation/Depression Cycles: Are innovation/depression cycles necessary for creativity? Why are they related? Are they linked to survival? When a human is depressed the survival process is initiated, which leads to creative ideas that help in the survival process. Mind plays a major role.

41. Concept of Creator: If there are creators or single creator, why different creations or religions are not consistent? Are religious groups modern forms of tribes? Early humans lived and fought against one another as tribes. Why did some famous scientists, including some Nobel laureates, believe in religion? Their Amygdala Scripts (AS) and hippocampus may be the reason for that. When their creative minds get old their logical ability gets hampered due to stress and brain's survival response.

42. Inter- and Intra-Species Wars/Fights for Survival: Plants and insects fight for survival. Mammals appear on the fight/survival scene and then humans appear. Human-animal survival fights start. Humans form tribes for survival. Human tribes fight for their rights/survival. Religious groups appear leading to inter- and intra-faith fights. Modern humans and science/technology; most humans retain their tribalism and religious beliefs resulting in tribes. As the tribes and religious groups are led by humans (not ideology) differences of opinion among humans lead to fights that continue even today. Although the size and capability of the human brain has increased providing huge neural capacity, capability and neural processing power, the mind remains plagued with tribal and religious

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beliefs. Modern science and technology are helping but the slow logical development of the human mind remains in some sections of society a major problem.

43. Mindfulness: It is focusing on things around you and not far away. It seems difficult to practice mindfulness because Amygdala Scripts (AM) and hippocampus play a big role when one practices mindfulness. Stress is a big factor when practicing mindfulness as it relates to MGBA making it a complex issue. The human mind affects the practice of mindfulness.

44. Virtual Marriage (VM): No sexual relationship but financial protection for orphaned children. The initiator of VM may be male or female. VM partners may have traditional marriage partners with others. Signing a contract for the above is important.

45. Prophets Were Extremely Creative but Not Their Followers Today: Prophets' childhood was miserable, and they questioned everything that made them miserable. Their followers today can't question religious beliefs and that makes them less creative or not creative. Religious people today, if confronted with extreme hostile environments, also are creative because they question why they are being treated differently. Mind has and is playing a big role. Interestingly the brain and mind were not realized/discovered until 510-440 BC (see Fig. 5).

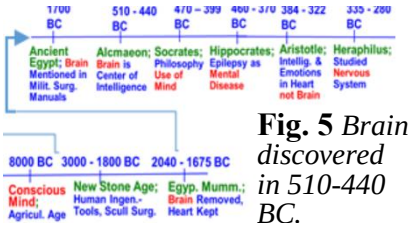

Fig. 5 *Brain discovered in 510-440 BC.*

46. Immune System (IS) Gets Weak: Ear canal and other channels get narrow or blocked and immune system can't reach the bacteria in these channels. The IS may not be weak. Inflammation may make it appear weak.

47. Old Humans Become Religious or Pseudoscience Believers: Perhaps they fear diseases and the unknowns. Or their PFC (frontal lobe) doesn't function properly due to stress. Or their testosterone is low, and they are not looking forward.

48. Anxiety-related Creativity: Stress leads to partial shutdown of frontal lobes causing anxiety starting anxiety phase. After stress decreases, the frontal lobes start recovering and creative phase starts. Creativity will be the highest for those who had a difficult/miserable childhood but are survivors. It relates to their Amygdala Scripts.

49. Chronic Stress Linked to BMI (Body Mass Index): Under stress, one engages with an actively that may be unique to one's Amygdala Scripts (AS). If that engagement lacks physical activity the BMI will go up. If that involves physical activity the BMI will go down. Chronic stress therefore affects BMI. As ASDEEP (AS, Sleep, Diet, Exercise, Environment & Prescription-drugs) affects Stress, how is BMI affected by ASDEEP?

50. Prophets Were not Believers of Existing Religions: It seems that they were not because the existing religion/ideology could not solve their problems. Their life was miserable, and they questioned everything including all the existing ideologies. That is why they became extremely creative and thought of another ideology or religion.

51. Hands-on Microsystems Education Using Smartphones: Basics; computer switches, sensors, circuits, integration, Programming, System Integration, Power Sources

Amygdala scripts are algorithms. Personality algorithms based on childhood memories.

Effects of low, high and chronic stress levels. Is low-level stress good for health?

52. Early Humans and Heartbeat: It seems that early humans noticed the changes in heart rate when they were excited, inventing stone instruments, fighting, fearing predators, having sex, etc. Based on such feelings they might have thought of the heart as the center of intelligence because the brain was not discovered before 510 - 410 BC.

53. Birds' Brain: Ant's brain allows an ant to remember, think and react to its environment. They feel no pain. They can smell and recognize their own colony. Parrots can talk or copy words.

54. Creative Person's Mind: A creative person, with difficult amygdala scripts hippocampus memories, can read faces better than others. To survive this person must guess the intentions of the people around him.

55. *Leaders of Ants Colony and Human MGBA:* Interestingly, an ant colony and human MGBA have two things in common; (a) the goal, assisted by multiple parts, is survival and (b) multiple parts are organized without a 'physical entity' as a leader [25] . Ants, coated with cuticular hydrocarbons (CH) specific to their colony, use CH for communication with intra colony ants [26] . The model suggested in this paper assumes that the 250,000 neurons in ant brain detect CH data leading to an

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algorithm that is leader of the colony. The data gathered by external CH sensors can lead to a similar algorithm [27] .

56. Left/Right-Handed Decision: Interestingly left- or right-handed decisions by humans are made before birth [28] [29] . Anxiety and depression in twins?

57. Left/Right-Hemisphere Usage: Interestingly women use left hemisphere more than right hemisphere of brain. The men do the opposite. A couple consisting of a male and a female seems better positioned to live longer. This seems because the couple together uses both the hemispheres. Why women living alone survive longer that men living alone? Can a mind model help understand the differences?

58. Charity Curbs Creativity: Charity money, with high overheads, received without any effort will lead to less creativity [30] . Charity used to build schools/universities seems a better way.

V. CONCLUSIONS

Roles of Amygdala Scripts, Hippocampus, Mind, Brain, and MGBA in Stress, Health, Longevity and Life Quality of Humans are very important. Mind, like a CEO of a company, can bring success or destruction to human health because it is the decision maker.

REFERENCES

[1] 'Google Scholar Search' on "Roles of mind and brain in human health", provides no specific model of mind; https://scholar.google.com/scholar?as_ylo=2020&q=roles+of+mind+and+brain+in+human+health&hl=en&as_sdt=0,23

[2] D.M. Aslam, "Intriguing Aspects of New Scientific Mind Model as EEG Data Based Algorithm", IJAECCE, Vol. 8, Issue 12, 2019, https://ijarcce.com/wp-content/uploads/2020/01/IJARCCE.2019.81216.pdf

[3] D.M. Aslam, "Self-Study and -Care of Human Health Problems Guided by New Scientific Mind Model", IJAECCE, Vol. 10, Issue 5, 2021; https://ijarcce.com/wp-content/uploads/2021/05/IJARCCE.2021.10502.pdf

[4] D.M. Aslam, J. Shen, and T. Mahmood, "Self-Study of Cancer Reoccurrence Stress and Effects of Keto Diet and Black Seed Oil; https://ijarcce.com/wp-content/uploads/2023/04/IJARCCE.2023.12426.pdf

[5] Melek ALTUNKAYA et al., "Alterations in Expression of Neurodegeneration-Related Genes After Long-Term Potentiation in the Hippocampus of Hyperthyroid Rats"; https://namikkemalmedj.com/articles/alterations-in-expression-of-neurodegeneration-related-genes-after-long-term-potentiation-in-the-hippocampus-of-hyperthyroid-rats/doi/nkmj.galenos.2022.05924

[6] P. Hu et. el., "New Insights into the Pivotal Role of the Amygdala in Inflammation-Related Depression and Anxiety Disorder", Int. J. Mol. Sci. 2022, 23, 11076.; https://doi.org/10.3390/ijms231911076 https://www.mdpi.com/journal/ijms

[7] Koban, L., Gianaros, P.J., Kober, H. *et al.* The self in context: brain systems linking mental and physical health. *Nat Rev Neurosci* **22**, 309–322 (2021). https://doi.org/10.1038/s41583-021-00446-8

[8] D.M. Aslam, "MUSE-2 for Biomedical Disease Prediction and Unique K-16 Education and Outreach", IJARCCE, Vol. 13 (5), 2024; DOI: 10.17148/IJARCCE.2024.13501; https://ijarcce.com/wp-content/uploads/2024/05/IJARCCE.2024.13501.pdf

[9] S. Parrott and T. Hopp, "Reasons people enjoy sexist humor and accept it as inoffensive", Published online, 115-124, 2019: https://doi.org/10.1080/15456870.2019.1616737

DOI: 10.17148/IJARCCE.2024.131017

[10] J. A. Woodzicka, R. K. Mallett and K. J. Melchiori, "Gender differences in using humor to respond to sexist jokes", Humor 2020; 33(2): 219–238; https://doi.org/10.1515/humor-2019-0018

[11] V. Zarulli, et. al., "Women live longer than men even during severe famines and epidemics", 115 (4) E832-E840, 2018; Biological Sciences; https://doi.org/10.1073/pnas.1701535115

[12] Meier, M., Wirz, L., Dickinson, P., & Pruessner, J. C. (2020). "Laughter yoga reduces the cortisol response to acute stress in healthy individuals". *Stress*, *24*(1), 44–52. https://doi.org/10.1080/10253890.2020.1766018

[13] Y. JongEun, "Potential Therapeutic Benefits of Laughter in Mental Health", Tohoku J. Exp. Med., 2016, 239, 243-249 243 243, Published online July 16, 2016; doi: 10.1620/tjem.239.243. e-mail: jeyim@syu.ac.kr

[14] N.I. Siddqui, et. al., "Study of menstrual cycle synchrony in female medical students sharing common accommodation"; J. Family Medicine and Primary Care, 12(11):2922-2926, 2023; https://www.researchgate.net/publication/375788643_Study_of_menstrual_cycle_synchrony_in_female_medical_students_sharing_common_accommodation

[15] G. G. Rosenthal and M. J. Ryan "Sexual selection and the ascent of women: Mate choice research since Darwin", Science, Vol 375 (Issue 6578) 2022, https://orcid.org/0000-0003-0342-9024; DOI: 10.1126/science.abi6308

[16] The author of this paper observed in his backyard how a female sparrow treated a male sparrow before mating.

[17] D. G. Amen, M. Trujillob, D. Keatorc, D.V. Taylora, K. Willeumiera, S. Meysamid and C.A. Rajie, "Gender-Based Cerebral Perfusion Differences in 46,034 Functional Neuroimaging Scans", J. Alzheimer's Disease, xx (20xx) x–xx, 2017; DOI 10.3233/JAD-170432.

[18] Sarah Boesveld, "Men's and women's brains fundamentally different, study finds, one better at focusing, one better at multitasking", Proceedings of National Academy of Sciences, 2013; https://nationalpost.com/news/mens-and-womens-brains-fundamentally-different-study-finds-onebetter-at-focusing-one-better-at-multitasking

[19] M. Aslam (became Dean M. Aslam in 1996 after name change), P. Balk and D.R. Young, "High Temperature Annealing Behavior of Electron Traps in Thermal SiO_2", Solid Stat. Electron., 27, 709-719 (1984).

[20] D.M. Aslam, "MUSE-2 for Biomedical Disease Prediction and Unique K-16 Education and Outreach"; https://ijarcce.com/wp-content/uploads/2024/05/IJARCCE.2024.13501.pdf

[21] H. Utli, "Front. Med. Technol., Sec. Diagnostic and Therapeutic Devices"; Vol. 4 – 2022; | https://doi.org/10.3389/fmedt.2022.925554

[22] D.M. Aslam, Invention disclosures.

[23] https://draxe.com/black-seed-oil-benefits/

[24] Derek Black Report; https://www.nytimes.com/2017/08/22/podcasts/the-daily-transcript-derek-black.html

[25] M. Dorigo and T. Stützle "Ant Colony Optimization: Overview and Recent Advances", 2019; http://code.ulb.ac.be/dbfiles/DorSta2018MetaHandBook.pdf

[26] M.J. Green and D.M. Gordon, "Cuticular hydrocarbons inform task decisions", Nature 423, 32, 2003.

[27] B.W. Mel, "In the brain, the model is the goal", Nature Neuroscience 3, 1183, 2000.

[28] Valentina Parma, Romain Brasselet, Stefania Zoia, Maria Bulgheroni & Umberto Castiello, "The origin of human handedness and its role in pre-birth motor control", Scientific Reports, Nature, Vol 7, 16804, 2017

[29] Peter G. Hepper, "The developmental origins of laterality: Fetal handedness", Vol. 55 (6), 588-595, 2013; https://doi.org/10.1002/dev.21119

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DOI: 10.17148/IJARCCE.2024.131017

[30] COUNCIL FOR CREATIVE EDUCATION, FINLAND; https://www.ccefinland.org/6th-symposium-and-conference