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Fostering the green brain capital of future generations

Abstract

The uncertainty that marks adolescence and early adulthood is heightened by the simultaneous crises of mental health, education and youth unemployment. This puts the brain capital of young people under threat. We must invest in youth brain health and skills that are orientated towards environmental sustainability. This can train future creatives to develop impactful solutions to the current climate crisis as well as develop citizens who are ecologically intelligent and willing to enact environmentally sustainable and resilient behaviors. In effect, we propose a youth green brain capital model. This approach aims to refine and advance this agenda, including specific policy innovations, new investment approaches, and the development of a dashboard of instruments to track green brain capital. Our vision is to empower the next generation with ecologically intelligent leadership skills to address the pressing challenges of the climate crisis.

Keywords: youth unemployment, vision is to empower, resilient behaviors, climate crisis, brain health

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Veronica Podence Falcão, Francesca R Farina, Barnabas J Gilbert, Laura Boi, Jo-An Occhipinti, Mohamed Salama, William Hynes, Rym Ayadi, Vinciane Quoidbach, Tadeusz Hawrot, Michael Berk, Harris A Eyre

The Psychiatry and Mental Health Department of Hospital Beatriz Ângelo, Loures Psychiatry resident, Portugal

Correspondence: Veronica Podence Falcão, The Psychiatry and Mental Health Department of Hospital Beatriz Ângelo, Loures Psychiatry resident, Portugal, Email veronicapodenc@sapo.pt,veronicapfalca@gmail.com

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Introduction

Brain capital jointly conceptualizes brain health (namely the absence of mental and neurodegenerative diseases) and brain skills (such as creativity, emotional intelligence, resilience, and problem solving). This is essential for the development of society and the economy, noting that our brains are our greatest asset. It is a stock of productive and complex capital that accumulates over a lifetime and provides the basis for defining brain issues and quantifying and tracking them.[1] Individual and collective brain capital can be enhanced by policies and investments.

Different stages in life contribute in several ways to changes in brain capital, starting from youth to adults and ending with the late life brain capital.[2] The study the brain capital of young people is of particular importance, due to the potential to significantly influence the trajectory of social and economic development, and is driven by the direction of current policies. This is particularly salient given the simultaneous crises of mental health, education and youth unemployment in many countries. Hence, the brain capital of young people is currently under tremendous pressure.

The uncertainty characteristic of adolescence and early adulthood is currently heightened by pandemic-induced social isolation, social media, economic headwinds, and eco-anxiety, creating a real mental health crisis in young people and making global youth disillusionment a real threat. Eco-anxiety affects the daily lives and functioning of nearly half of the children and young people worldwide, who often blame government inaction for not doing enough to protect them.[3] Regarding the pandemic, although youth have been relatively protected from the lethality of the COVID-19 virus itself, they have been more vulnerable to its social, economic and psychological impacts.[4] Moreover, unlike physical health conditions, three-quarters of mental health disorders manifest themselves before age 25.[5]

The combination of these dynamics has created conditions conducive to a shadow pandemic among young people, for which we are not prepared, just as we were not prepared for the COVID-19 pandemic. Indeed, we are failing to anticipate and react to its consequences, with rates of suicide, depression, and addiction among youth further worsening in the post-pandemic period. Addressing the mental health crisis of youth is not only a global public health and moral imperative but is also the key to ensuring we have the next generation of leaders needed to build a prosperous future for our nations and the world. It is this future that we must build together.

Another issue impacting the brain capital of young people is the education crisis. By January 2022, more than 616 million students were affected by complete or partial school closures.[6] This resulted in milestone delays in acquisition or even loss of basic numeracy and literacy skills. Equally alarming is the number of children who have missed school meals. More than 370 million worldwide have been deprived of what is for some the only reliable source of daily food and nutrition.

Whether young people are enrolled in school, training, or working, these results have important implications for future economic growth, development and stability. The disruption of a young person's educational trajectory can have lifelong consequences in terms of occupational and educational opportunities and lifelong earning capacity. If neglected, it is likely to have significant and severe social repercussions worldwide.

The generational economic challenges facing young people are furthermore unique. Escalating housing prices have left many young people unable to afford a home, resulting in an unprecedented trans-generational transfer of wealth from poorer young renters to older wealthy landlords. Also, tertiary education costs escalated at an unprecedented rate in many developed countries, worsening youth debt and creating educational and career barriers.

It is therefore urgent to invest in education, job creation and training opportunities for young people to encourage them to find their place and contribute to more prosperous and stable societies with the resources to tackle global existential issues such as climate change. These mental health, education, and youth unemployment challenges can be framed as a crisis of youth brain capital (Figure 1). This is a public policy imperative with enormous implications for our collective future.[7]

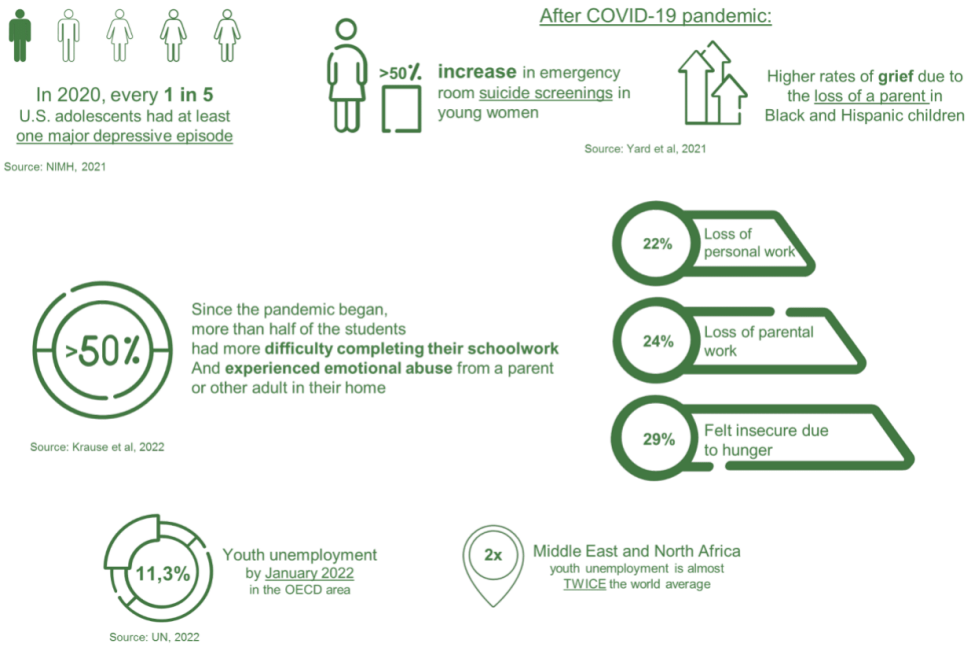

Figure 1 Youth brain capital crisis in numbers.

The term "resilience" has never been more relevant than it is today, and citizens of the future must know how to apply such skills in practice to anticipate and successfully cope with the pace of change in the world. Among the young are potential philosophers, artists, writers, scientists, entrepreneurs, and craftsmen - people who will create, constitute and continue our culturally rich and unique traditions and forge new paths. They have substantial work ahead of them, which will require great agility.

Changing behavior and beliefs towards more sustainable options, such as designing energy-efficient homes and transportation networks, must be reinforced at every stage of the learning journey. Among the plethora of challenges that await us are decarbonization, hardening infrastructure, and ending other ecological issues (e.g. deforestation, plastic pollution). This requires tremendous innovation and tenacity, reinforcing the importance of education and effective workforce development for this generation.

We suggest a new model of green brain capital. A sustainability-focused model of brain capital is based on three components: creative capital, ecological intelligence, and management of cognitive climate bias. Figure 2 provides a graphic representation of this model.

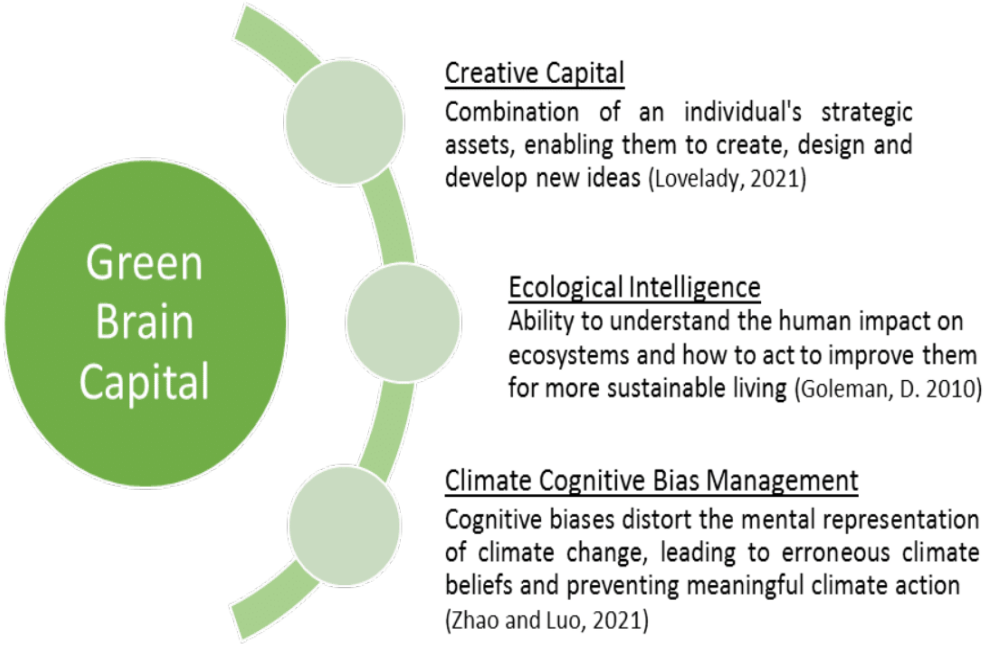

Figure 2 Representation of the green brain capital model.

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Understanding and managing climate cognitive biases is critical to future progress. Facilitating this challenge, Zhao and Luo recently published a framework outlining several prevalent climate cognitive biases, identifying potential causes, and proposing debiasing tools, with the ultimate goal of depolarizing climate beliefs and promoting action to mitigate climate change.

Society must undergo a major transformation of habits and behaviors at many levels, shifting perspectives, priorities and practices to answer the sustainable development's current and future challenges. For that to be possible, we require the development of more aware, informed, and educated communities and individuals; brain capital. In Table 1, we delineate boosters and impeders of green brain capital, which can be relevant at multiple scales, from the individual, family and community to the environment and society.

Table 1 Youth green brain capital: boosters and impediments

Impeders	**Creative Capital** - Adolescent mental health problems are associated with education, employment, psychosocial, cognitive functioning, and interpersonal relationship problems in the future, diminishing the personal and social resources constituting human capital. - Inequity in brain health and lack of appreciation from policymakers in certain regions compared to other health challenges.
	Ecological intelligence - Faulty messages from the Media that overrepresent climate change opposition. - Social misperception about climate emergencies leads one to doubt their opinions and beliefs. - Failure to appreciate the exponential growth of climate-destroying processes.
	Climate cognitive bias management A range of cognitive biases including: - Motivated cognition – information processing being shaped by personal goals and needs; - Confirmation bias – tendency to actively seek information that confirms prior beliefs and disregard the strength of opposing evidence; - Cognitive rigidity/ *Status quo* bias – inability to adapt to a new environment or update prior beliefs, minimizing efforts; - Lack of awareness or 'future thinking' – no awareness or appreciation of the urgency and severity of climate change.
Boosters	**Creative capital** - Interventions to recognize and address youth mental health problems, particularly in low- and middle-income countries, to avert severe adverse adult and societal consequences. - Notable projects that address youth mental health include the ORYGEN Global Framework for Youth Mental Health, the US Surgeon General's Youth Mental Health Advisory of 2022. - Talk about the importance of green behaviours to the youth generation, making it a trending topic.
	Ecological intelligence - Gamification, applying game design principles to a non-gaming context, has been used to promote pro-environmental behaviors. Possible targeting areas are sustainability education, energy reduction, transportation, air quality, waste management and water conservation. - Virtual reality has been explored to drive sustainable behavior change in several situations, through a wide range of devices, technologies, and modalities, turning education more appealing and providing a look into future actions' outcomes. - Development of ecopedagogy is a central theme in school education reform, recognizing climate change issues as fundamental to a citizen's cultural basis. - Provide a regularly-updated list of good quality information, fighting the untrustworthy sources.
	Climate cognitive bias management There are several debiasing tools to note: - Framing – aligning climate communication with peoples' ideologies and values. - Reconstruction – reconstructing accurate representations of social norms. - Observational learning – acquiring attitudes, norms, and facts by observing the behavior of others or watching videos, considering the legacy for the future. - Use default – making climate-friendly options the *status quo*.

The instruments' implementation dashboard could include metrics related to youth mental health (e.g., incidence and prevalence of relevant mental disorders, and eco-anxiety), creative capital, educational data, and ecological intelligence data. Such creative capital metrics were recently profiled by Szara and Slusarczyk,[8] paying attention to three core components of the creativity index - talent, tolerance, and technology.[8] Regarding ecological intelligence, the Ecological Intelligence Scale has recently been developed and can be useful for assessment. It includes measures of holism, social intelligence, and economics.[9–19]

Conclusion

Our proposal offers an innovative and forward-thinking approach to advancing the global sustainability agenda. Our youth green brain capital model aims to cultivate and enhance the intellectual capabilities of our youth through cutting-edge technologies and investment strategies. Our proposal includes targeted policy innovations that will create a supportive and enabling environment for brain capital development, as well as innovative investment strategies to provide financial resources for these initiatives. At the core of our model is the belief that investing in human capital, particularly brain capital, is fundamental to shaping our future. By employing a diverse range of monitoring tools, we can effectively track progress and make necessary adjustments to our strategies. Our ultimate goal is to create a sustainable and equitable future for all by nurturing and developing the intellectual capabilities of our youth. We are thrilled to embark on this journey towards a better future, and we are confident that our youth green brain capital model will serve as a valuable framework for achieving this vision.

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Conflicts of interest

The author declares there is no conflict of interest.

References

1. Smith E, Ali D, Wilkerson B, et al. A Brain Capital Grand Strategy: toward economic reimagination. *Mol Psychiatry*. 2021;26:3–22.
2. Beddington J, Cooper C, Field J. et al. The mental wealth of nations. *Nature*. 2008;455:1057–1060.
3. Hickman C, Marks E, Pihkala P, et al. Climate anxiety in children and young people and their beliefs about government responses to climate change: a global survey. *The Lancet Planetary Health*. 2021;5(12):e863–e873.
4. Smith E, Graham C, Lenze E, et al. *The economic and societal effects of COVID-19 on our brains. Brookings*. 2022.
5. Kessler RC, Amminger GP, Aguilar-Gaxiola S, et al. Age of onset of mental disorders: a review of recent literature. *Current opinion in psychiatry*. 2017;20(4):359–364.
6. UNICEF. *COVID:19 Scale of education loss 'nearly insurmountable', warns UNICEF*. 2022.
7. Sinha A, Ojha R, Smith E, et al. Smart Growth: the Case for Measuring Brain Capital. *Psychiatric Times*. 2022.
8. Szara K, Ślusarczyk B. Capacities for the Development of Creative Capital in Lithuanian Counties. *European Review*. 2020;28(4):678–692.
9. Okur-Berberoglu E. An Ecological Intelligence Scale Intended for Adults. *World Futures*. 2020;76(3):133–152.
10. Ibanez A, Eyre H. Brain capital, ecological development and sustainable environments. *BMJ Ment Health.* 2023;26(1):1–3.
11. NIMH, 2020 National Survey on Drug Use and Health (NSDUH): Methodological Summary and Definitions. *Substance Abuse and Mental Health Services Administration Center for Behavioral Health Statistics and Quality*. 2021.
12. Yard E, Radhakrishnan L, Ballesteros MF, et al. Emergency Department Visits for Suspected Suicide Attempts Among Persons Aged 12-25 Years Before and During the COVID-19 Pandemic - United States, January 2019-May 2021. MMWR. *Morbidity and mortality weekly report*. 2021;70(24):888–894.
13. Krause KH, Verlenden JV, Szucs LE, et al. Disruptions to School and Home Life Among High School Students During the COVID-19 Pandemic — Adolescent Behaviors and Experiences Survey, United States, January–June 2021. *MMWR Suppl*. 2022;71(Suppl-3):28–34.
14. Eyre H, Agustín Ibáñez, Veronica Podence Falcao, et al. Brain Capital is Key to a Sustainable Future. *Rice University's Baker Institute for Public Policy*. 2023.
15. United Nations. *Middle East and North Africa: addressing highest rates of youth unemployment in the world*. 2022.
16. Lovelady B. *Creative capital is the secret sauce, not venture capital*. TechCrunch. 2021.
17. Goleman D. *Ecological Intelligence: The Hidden Impacts of What We Buy*. 1st pbk edn. New York: Broadway Books. 2010.
18. Stevens P. *Ecological Intelligence*. Conference: Bournemouth University Psychology Seminar Series. 2007.
19. Zhao J, Luo Y. A framework to address cognitive biases of climate change. *Neuron*. 2021;109(22):3548–3551.

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