

Digital risks. Bridge sport as a socio-cognitive strategy to mitigate mass screen-addiction

Abstract

The proliferation of algorithms enabling machines to learn and autonomously improve their efficiency (*"artificial intelligences/AI"*), alongside advanced experimentation with *"brain technologies"* and *"social"* robots, necessitates a critical reflection about the anti-social side effects of the tumultuous and unchecked digitalization process affecting regressive and disturbing anthropological and psychiatric aspects.

In particular, the major issue of *"digital psychopathologies"* demands urgent solutions to protect the human brain and bolster *"natural intelligence"* against the destructive impact of mass screen-addiction. The proposal to introduce students to the sport of Bridge could just serve as an effective *"digital detox"* strategy, fostering a rethinking of *"sustainability"* in terms of re-humanization, deceleration, and degrowth.

This work aims to explore the socio-cognitive potential of Bridge sport in relation to the need to promote sociability, social intelligence, and collective intelligence.

Keywords: digital risks, screen-addiction, digital dementia, digital alienation, social intelligence, collective intelligence, Bridge mindsport

Volume 13 Issue 4 - 2026

Mariano Dimonte

MD, Sociologist, Radiologist, Nuclear Medicine Specialist,
Radiology Department, Scorrano City Hospital, Italy

Correspondence: Mariano Dimonte, MD, Sociologist,
Radiologist, Nuclear Medicine Specialist, Radiology Dpt,
Scorrano City Hospital, ASL Lecce, Scorrano City Hospital, Italy,
Tel +39-347-3616249

Received: August 06, 2026 | **Published:** September 8, 2026

Background

The acceleration of technological progress driven in part by Artificial Intelligence (AI) appears to intensify human dependence on screens and devices in a world where everything will soon be interconnected by *Internet of Everything (IoE)*.^{1,2}

As Zygmunt Bauman (*Liquid Modernity*, 2000), who writing in the 3G era, might well have observed, this increasingly complex technosphere threatens to further loosen social ties, drive people apart, and weaken the brains of a humanity composed of a chaotic aggregates of digitized *social atoms* interacting with *syntetic entities*.

This new *"hybrid"* reality necessitates new conceptual frameworks to describe human-machines interactions, while the constant switching between *online* and *offline* dimensions that lead to the blurring of boundaries between factual life and *onlife*, presumably forces the human brain to ceaseless adaptive strain.

The literal *incorporation* of the devices, which have become artificial extensions of our body, *neural chips*, biosensors, *wearables* transform the *bios* and mind processes deeply changing human nature.

Dominance of images and visual culture; waning interest in books; externalization of memory (*"Google effect"*) and spatial orientation (*"GPS-dependency"*) are just a few among the additional phenomena associated with the sociotechnical process of digitisation.

It is hypothesized that an indefinite mix of factors connected to digital are involved in someway in causing neuronal damage and altering neuroplasticity, leading to brain atrophy,¹⁻⁷ while technological acceleration produces alienation and stupidity fueling the vicious cycle of pathological addictions, including *screen-addiction*.⁸⁻¹⁰

Systems, devices, and applications seem deliberately designed to reinforce repetitive, automatic, and unreflective behaviors, while we passively absorb content from screens that is banal, vulgar, stupid, puerile, or violent, alongside fake information and decontextualized messages.^{11,12}

Far from advocating a fanatically technophobic or apocalyptic stance - not least for professional reasons, given that the author is a radiologist and nuclear medicine physician - the very central theme of this critical reflection is to address, from a Marxian sociologic perspective, the issue of the counterproductive side effects of digitisation, in order to shedding light on the dark side of a technical progress in my opinion aimed to improve means of production, work efficiency, productivity, corporate profits.

In particular, I wish to draw the attention of fellow radiologists and radiation oncologists not only to the self-referential and autonomous tendencies of *"artificial agents"*, algorithms and machines that, shifting from mere tools at our service, risk supplanting our intelligence and colonizing every aspect of human and social life (affecting, of course, clinical and diagnostic practice).

But above all, I want to focus the discussion on the major problem of mass screen-addiction, with its attendant consequences of stupidity, alienation, functional illiteracy, social degradation.

Acceleration, alienation, "Digital Dementia"

A part from work and life efficiency the unchallenged proliferation of algorithms and self-learning machines capable of autonomous inter-communication and the instantaneous processing of large amounts of data (all supported by cloud infrastructure and data centers with an ever-growing environmental footprint) enables the system to more effectively disseminate consumerist values, control information, shape public opinion, and cement people's dependence on screens.

In particular, the unconscious, instinctive, compulsive attachment to smartphones, the internet, search engines, social networks, video games, e-commerce sites, platforms, apps, and various forms of content can be a significant source of anxiety and distress negatively altering concentration, attention, memory and social behaviors, as in the case of *phubbing* ("phone-snubbing").

Emergency rooms are increasingly seeing critical cases linked to (*techno*)stress-induced *burnout* and panic attacks related to relentless

episodes of *nomophobia* (“no mobile phone phobia”) and *FoMo* (“fear of missing out”).

The landscape of so-called “*digital psychopathologies*” also encompasses *internet addiction disorder*, *internet gaming disorder*, *cyberchondria*, and non-specific disorders related to a “*problematic*” social media use.

While deferring a detailed analysis of these aspects to the “*Policy Brief on the digital determinants of mental health and well-being for young people*” published online by the WHO (2025), here we simply note that the multifactorial nature of screen-addiction appears to share pathogenic mechanisms with other forms of pathological addiction.¹³⁻¹⁵

In particular, the most alarming harmful effect of screen-based addiction, aside from emotional dysregulation and social isolation, is the disruption of sleep.

We are well aware of how the loss of sleep and sleep fragmentation, in this case caused by disturbances from constant flashes of light, alerts, notifications, messages affects quality of life and cognitive functioning, as explained by Dresch-Langley and Hutt’s paper entitled “*Digital addiction and sleep*” (2022).

It is no coincidence that a significant amount of young people, report insomnia, daytime drowsiness, lethargy, general malaise, anxiety, lack of motivation to study.

But, the aspect I find most concerning regarding what Bauman terms “*swarms of stupid all differently similar people*”, is the condition that neuroscientist Spitzer has provocatively labeled “*digital dementia*.”

In essence, Spitzer and other independent researchers hypothesize that a large range of cultural regressive phenomena and environmental stressors (including intense electromagnetic emissions from devices) converge to cause brain damage and impair cognitive functions, particularly memory.¹⁶⁻²¹

In previous publications, available online, I have drawn attention to how digitisation contributes to making *i-Health* increasingly impersonal and “*McDonaldized*”, while in parallel the education sector (including new Med-Tech faculties), while educational institutions are concerned with equipping students with *digital skills*, in order to prepare them to cope the newest AI-driven Industry 5.0 models.

Furthermore, I have already highlighted how the “*Medicus videns*”, the equivalent of the regressed, single-sense hominid described by Giovanni Sartori in the book *Homo Videns* (1997), appears increasingly disinclined toward clinical reasoning (logical, deductive, probabilistic, prognosis-oriented method) while he is unwittingly drawn into projects making bionic humans increasingly high-performing and competitive (in this regard, see the new posthumanist conceptualizations concerning “*Augmented Humanity*” and “*Humanity 6.0*”).

Despite these artificial enhancements, as WHO’s 2022 World Mental Health Report indicates, the state of collective mental health is becoming increasingly precarious.

Trapped in a sort of hamster wheel, the system ultimately paralyzes us, condemning us to frustration, alienation, distress. We are forced to run ceaselessly to keep pace with the times and to lose our competitive edge. But we get nowhere and achieve no goals. In an ocean of choices we are unable to evaluate every opportunity, so we remain deeply dissatisfied with our lives and disappointed at having to settle for whatever comes our way.^{22,23}

In the book *Acceleration and Alienation* (2015) Hartmut Rosa theorizes how “*dromological*” acceleration serves the interests of economic growth: it literally crushes dreams, aspirations, life plans within the unstoppable gears of consumerism generating widespread existential malaise and dissolving social bonds.

In parallel, I would add, alienated humanity is called upon to interact with synthetic agents and artificial entities that are now ready to assert their own right to identity and social recognition, and to decisively displace humans from the central position in the cosmos they held during the “*analog era*”, that is, until about fifty years ago.^{24,25}

Purpose of this opinion paper

Focusing specifically on the social phenomenon of mass screen-addiction, this critical and polemical article aims to provocatively propose the sport of Bridge as a potentially effective socio-cognitive resource for countering these unsustainable, socio-toxic trends and acting as a “*protective factor*” against digital risks and digital psychopathologies.²⁶⁻³²

The optimistic and constructive hypothesis I put forward is that introducing young people to Bridge - through school programs incorporating this game into a broader educational campaign promoting the critical and responsible fruition of digital media - could, in some way and to some extent, counter the consumerist forces that exploit the erosion of critical thinking, promote cultural homogenization, conformity, docility, or that induce social isolation.

This is, in a sense, a fantastic utopia grounded in the unpredictability of historical conditions, whereby, almost “*miraculously*,” by “*butterfly effect*” can be generated massive cultural, social, and political shifts.

However, it is reasonable to hypothesize that a drastic reduction in screen addiction through the contribution of a social mindsport as Bridge can somehow affect current trends, steering technology away from potentially dystopian trajectories.

To provide a scientific basis for this project, I drew upon a literary material consisting of arbitrarily selected articles among an amount of full-text free articles searched from Google Scholar and PubMed.

From these papers released in English within the last five years (January 2020–August 2026) I chose the ones that provided me with additional insights beyond what was already presented in previous works on screen-addiction.

Here the additional keywords for the bibliographic search have been: Bridge mindsport, digital dementia, digital alienation, digital detox, emotional intelligence, social intelligence, collective intelligence.

I then employed the most compelling findings eclectically within a highly concise, and by no means exhaustive or definitive discussion.

These findings are bolstered by personal insights gained from a “*view from within*,” as I sought to capture the sociatric potential of Bridge “*in the field*” acting in the dual role of player and “*participant observer*”.

Bridge: an ontologically social Sport

Basically Bridge mindsport is a game of strategy and coordination played in partnership against another pair of opponents; the result achieved by a pair is determined by comparing their performance with that of all other pairs who played the same hand during the tournament.

Consequently, the specific “*tetradic*” dynamic inherent in the game places significant demands on cognitive processes, emotional and communication skills.

These socio-cognitive mechanisms suggest, as has been observed among expert players and professionals, that competitive play fosters mind well-being and collective intelligence.^{33–35}

Without delving into the details of a complex code including logical rules, strategic behaviors, considerations of an “economic” nature, we can state that this game requires a strong aptitude for collaboration, shared decision-making, empathy.

In essence, Bridge compels the players, acting as a social agents, to be altruistic, cooperative, supportive, respectful of their partner’s choices.

Consequently we can assume that for players motivated to improve own performance, this card game can foster the progressive development of openmindedness and collectivist outlook.

At the same time, players benefit from the emotional gratification of intelligent fun and skillful play facilitated by the partner,³⁶ as well as a healthy sense of well-being, a condition that some authors associate with positive psycho-neuro-immuno-endocrine regulation.^{37,38}

We also know that, compared to individual sports, team sports like Bridge require mutual trust and a sense of belonging, while within a subculture the rituals generate in the members a sense of well-being and happiness by means of emotional energy that flows between people.³⁹

It is no coincidence that the most competitive Bridge pairs and teams are those most committed to collectively developing the social skills needed to navigate the communicative dynamics which unfold silently at the gaming table.^{40–42}

In other words, Bridge demands continuous training of both cognitive functions (memory, logic, deduction, focus, decision-making, problem-solving) and emotional intelligence (emotional self-control, self-awareness, impression management, empathy). These functions and skills naturally reinforce one another.

Social intelligence, in turn, comes into play by enabling the player to behave appropriately within in a competitive context dominated by uncertainty, scarcity of information, unpredictable situations mutually influencing one another.

It therefore seems inevitable that this unique form of empathy-mediated strategic interaction between social actors generates collective intelligence. When a pair or a group must coordinate and cooperate towards a common goal, collective intelligence inevitably emerges. In addition, given that the dialogue between the two Bridge players is purely symbolic, conveyed solely through gaming tools (playing cards and “*bidding cards*”), this type of social interaction relies basically on the emotional realm (much like *online groups* communicating exclusively via text messages).

In fact Nash’s theorem demonstrates that groups outperform and operate more efficiently than individual people because group reasoning fueled by the comparison of diverse perspectives, facilitates the resolution of complex problems.

This group-level intellectual quality known as the “*c-factor*” proves to be relatively independent of the individual members’ IQs; instead, the “*c-factor*” is influenced by cultural diversity, freedom of thought, and the density of communicative exchanges.^{43–45}

So, based on these psycho-sociological foundations, I can assume that Bridge can yield collective benefits in terms of emotional wellbeing and socially distributed intelligence.^{46–48}

In particular, it seems to me is reasonable to assume that the intellectual engagement required by Bridge can help students acquire critical, emotional, and altruistic skills that improve quality of life and strengthen social bonds.

This combined enhancement of social and critical skills could work as a valuable “*protective factor*” against a wide range of stupefying and anti-social tendencies, including *cybercrimes* and *cyberbullying*.⁴⁹

Furthermore, in my personal view, Bridge should be explored through the lens of “*Gamification*”, as part of modern pedagogical strategies designed to boost student motivation and improve academic learning,⁵⁰ apart from to be considered an active “*digital detox*” strategy aimed at drastically reducing young people’s attachment to screens.^{51–55}

In essence, this team-based mind sport recognized by UNESCO for its significant educational value offers a valuable opportunity to counter an amount of trends that paradoxically promotes virtual communication, remote learning, telemedicine.^{56,57}

It could also represent, if you will, a (counter)cultural contribution to the education of citizens who are more critic, sensitive, responsible, community-minded.^{58,59}

Final remarks

This paper clearly show methodological limitations, given that its aim is certainly not to provide a rigorous systematic review of the available literature, but rather to spark interest and discussion regarding the issue of digital risks and the sustainability of the so-called “*digital transition*” toward a generative AI-driven 5.0 Society.

Setting aside, therefore, the undoubted advantages and opportunities that digitalization promises, including in the fields of diagnostic radiology, radiotherapy, and healthcare in general, the issue of adverse and counterproductive side effects of the digitisation process have to be addressed openly and courageously, given the severe anthropological and sociological repercussions involved.

Regarding Bridge, I provocatively suggest to implement in schools and universities this mindsport as a form of “*social therapy*”, that is a strategy potential able to combat mass video-addiction, although I must note the scarcity of robust, “quantitative” evidence from controlled, multicenter clinical trials.

Such empiric evidence would be undoubtedly needed to assess the long-term health and social benefits reported by participants in *digital detox* interventions (groups of university students) and by elderly individuals suffering from cognitive decline and early-stage dementia, patients recruited at numerous clinical centers where Bridge is being tested as a socio-cognitive support strategy.^{60–67}

By this paper addresses to colleagues in my own professional field I have tried to highlight how both the uncritical acceptance of protocols and instrumental routines, and a state of passive dependence on screens, devices, applications, “*super-smart*” algorithms, can ultimately undermine our cognitive and social abilities and, in turn, these conditions can ultimately impact the appropriateness and safety of our diagnostic practice.

Paying closer attention to digital risks and psychopathologies also would mean reflecting seriously on the state of the collective

mental health and committing ourselves to challenging a system that paradoxically breeds stupidity, conformity, cultural homogenization, preventing the (ri)generation of social and collective intelligence.

Based on the literature reviewed - only a portion of which I cite here - and my own “*in-field*” observations, I believe there is enough justification to promote Bridge mindsport among the students by means of cross-disciplinary activities and programs for critical digital media literacy.^{68,69}

The complexity of the issues addressed in this opinion paper prevents me from summarizing exhaustively the body of philosophical and sociological reflections on the ontologic sociability of human beings threatened by the digitisation.

It would be even more challenging to explain here how such a project might draw inspiration from a critical theory of capitalism that views “*sustainability*” and social development through the lenses of circular economy, deceleration, degrowth, conviviality, communitarianism.⁷⁰⁻⁷²

Acknowledgement

None

Conflicts of interest

All of the authors have no conflict of interest.

References

- Dimonte M. Social and Health sustainability of 5G technology: the side unpredictable effects of the unchallenged digitisation of society. *AJ Prev Med Public Health*. 2020;6(5):134-137.
- Dimonte M. The counterproductive side effect of 5G. Considerations in the time of pandemic. *J Preventive Med*. 2020;5(3):9.
- Alimour SA, Alrabeei M. Redefining psychopathology in the context of digital overload: emerging disorders in the age of information saturation. *Front Digit Health*. 2025;7:1693287.
- Christakis DA, Hale L. Handbook of Children and Screens. Springer;2025.
- Masri-Zada T, Martirosyan S, Abdou A, et al. The impact of social media & technology on child and adolescent mental health. *J Psychiatry Disord*. 2025;9(2):111-130.
- Nakshine VS, Thute P, Khatib MN, et al. Increased screen time as a cause of declining physical, psychological health, and sleep patterns: a literary review. *Cureus*. 2022;14(10):e30051.
- Spitzer M. Demenza Digitale. Come la nuova tecnologia ci rende stupidi. Corbaccio;2019.
- Janardan V, Suri R. The screen paradox: cognitive costs in the digital age. *Arch Psychiatry*. 2024;2(1):33-34.
- Patel DG, Kshatri AHS, Kommuru S, et al. A narrative review of digital addiction and health: a new challenge for modern Medicine. *Cureus*. 2025;17(12):e100491.
- Xu Y, Zeng K, Dong L, et al. Understanding older adults smartphone addiction in the digital age: empirical evidence from China. *Front Public Health*. 2023;11:1136494.
- Oliveira Ferreira R, Oliveira Karnikowski IG, Costa EN, et al. Ability to detect digital risks: effects of an educational intervention and dementia risk level. *Int J Environ Public Health*. 2025;23(58).
- Lv S, Hong Y, Huang Y. Study on the influence mechanism of internet risks on the development risks of chinese adolescents: the mediating role of digital dependence and the moderating role of digital skills. *Front Psychol*. 2025;16:1699803.
- Akhtar S. Technology: The Genesis of Addiction. Platinum Atarva Publications; 2023.
- Shukri M, Shahim MRA, Yusuf SNM. Internet and game addiction in relation to sleep disturbances: findings from a University student sample. *Mal J Med Health Sci*. 2025;21(6):1-8.
- Carr N. Internet Ci Rende Stupidi. Cortina; 2011
- Ali Z, Ianarthanan I, Mohan P. Understanding digital dementia and cognitive impact in the current era of the internet: a review. *Cureus*. 2024.
- Amos JG, Zheng L, Ermudugolla R, et al. A scoping survey to inform design of digital dementia risk reduction interventions for adults concerned about their cognitive health. *J Alzheimers Dis Rep*. 2024;8:697-708.
- Gwinn J. Overuse of technology can lead to “digital dementia.” *Alzheimers.net*. November 2013.
- Kanbay Y, Yalcinturk AA, Babaoglu E, et al. Digital dementia: the mental destruction of technology addiction. *J Psychiatric Nursing*. 2025;16(1):67-72.
- Manwell LA, Tadros M, Ciccarelli TM, et al. Digital dementia in the internet generation: excessive screen time during brain development will increase the risk of Alzheimer’s disease and related dementias in adulthood. *J Integr Neurosci*. 2022;21(1):28.
- Moledina S, Khoja A. Digital dementia. Is smart technology making us dumb? *Ochsner J*. 2018;18:12.
- Guerrero G, da Silva FJM, Fernandez-Caballero A, et al. Augmented Humanity: a systematic mapping review. *Sensors*. 2022;22:514.
- Contri A. La sindrome del criceto. Nexus; 2023.
- Moerman CJ, van der Heide L, Heerink M. Social robots to support children’s well-being under medical treatment: a systematic state-of-art review. *J Child Health Care*. 2018;23(4).
- Cardenuto JP, Yang J, Padiha R, et al. The age of synthetic realities: challenges and opportunities. *arXiv*. 2023.
- Balcioglu YS, Biyiklar MA. Analyzing nomophobia among TikTok users: a data mining and text analysis approach. *Current Psychology*. 2025;44:18220-18242.
- Brautsch LAS, Lund L, Andersen MM, et al. Digital media use and sleep in late adolescence and young adulthood: a systematic review. *Sleep Med Rev*. 2023;68:101742.
- Hamzaa HG, Ramadan Atta MH, Elmetwally Omar MEH, et al. Examining nursing student’s prevalence of nomophobia and psychological alienation and their correlates with fear of missing-out: a multisites survey. *SAGE Open Nurs*. 2024;10:1-17.
- Ibtissem T. Alienation issues and artificial intelligence in the era of Society 5.0. Arab Media Society. 2023.
- Bay H, Gao K. The study of social media alienation in the digitized world. *Advances in Social Science, Education and Humanities Research*. 2021;571.
- Butler M. Fracturing the affordance space: an account of digitalized alienation. *Front Psychiatry*. 2024;15:1407586.
- Karayaman S. The alienating effects of technology: does technological innovation cause work alienation? *J Manag Econ Stud*. 2024;6(2):204-218.
- Tschew EM. Acceleration through digital communication: theorizing on a perceived lack of time. *Humanistic Manag J*. 2021;62(2):273-287.
- Shim T, Go E. The impact of school burnout on life satisfaction among university students: the mediating effects of loneliness and fear of alienation. *Behav Sci (Basel)*. 2025;15(8):1083.
- Steinmann M. Alienation in a world of data: toward a materialist interpretation of digital information technologies. *Philos Technol*. 2022;35(4).

36. Berezin G. A bridge to better health? *Psychol Today*. 2001;June 4.
37. Diamond MC. Bridge and its effects on the immune system. *Cogn Brain Res*. 2001;12(2):329-331.
38. Leutwyler K. Playing bridge may boost immunity. *Sci Am*. 2000;November 8.
39. McDonnell D, Punch S, Small C. Individual wellbeing and bridge: an empirical analysis. 2017.
40. Punch S, Snellgrove M. Playing your life: developing strategies and managing impressions in the game of bridge. *Sociol Res Online*. 2020;26(3):601-619.
41. Punch S, Russel Z, Cairns B. (Per)forming identity in the mind-sport bridge: self, partnership and community. *Int Rev Sociol Sport*. 2020:1-19.
42. Punch S, Russel Z. Playing with emotions: emotional complexity in the social world of elite tournament bridge. *Emot Soc*. 2022;4(2):238-256.
43. Sassi S, Ivanovic M, Chbeir R, et al. Collective intelligence and knowledge exploration: an introduction. *Int J Data Sci Anal*. 2022;14:99-111.
44. Rowe LI, Hattle J, Munro J. High-performing teams: is collective intelligence the answer? *PLoS One*. 2024;19(8):e0307945.
45. Engel D, Woolley AW, Jing LX, et al. Reading the mind in the eyes or reading between the lines? Theory of mind predicts collective intelligence equally well online and face-to-face. *PLoS One*. 2014;9(12):e115212.
46. Blajet P, Przyborowska B, Kedziora-Kornatowska K, et al. How learning to play the game of bridge affects well-being and cognitive skills of the elderly: pilot study. Nicolaus Copernicus University.
47. Makri M, Iakovu KV, Dasygenis M, et al. The Bridge project: a European innovative intergenerational approach using serious games for people with dementia. *Psychology*. 2021;12:1434-1456.
48. McCutcheon A, Punch S. A sociological study on promoting the mind-sport bridge. *EuroBridge*. 2024.
49. Zhao B, Liu Y, Wang Z, et al. Long-term bridge training induces functional plasticity changes in the brain of early-adult individuals. *Behav Sci (Basel)*. 2024;14(6):469.
50. Petrucci V. *Il potere della Gamification*. FrancoAngeli, Milano, 2025.
51. Anandpara G, Kharadi A, Vidjia P, et al. A comprehensive review on digital detox: a newer health and wellness trend in the current era. *Cureus*. 2024;16(4):e58719.
52. Mirbabaie M, Stieglitz S, Marx J. Digital detox. *Bus Inf Syst Eng*. 2022;64(2):239-246.
53. Mohamed SM, Abdallah LS, Kotb Ali FN. Effect of digital detox program on electronic screen syndrome among preparatory school students. *Nurs Open*. 2023;10:2222-2228.
54. Radtke T, Apel T, Schenkel K, et al. Digital detox: an effective solution in the smartphone era? A systematic literature review. *Mobile Media Commun*. 2022;10(2):190-215.
55. Ramadhan RN, Rampengan DD, Yumnani DA, et al. Impact of digital social media detox for mental health: a systematic review and meta-analysis. *Narra J*. 2024;4(2).
56. Cross ES, Hortensius R, Wykowska A. From social brains to social robots: applying neurocognitive insights to human-robot interaction. *Philos Trans R Soc B Biol Sci*. 2019;374:20180024.
57. Henschel A, Hortensius R, Cross ES. Social cognition in the age of human-robot interaction. *Trends Neurosci*. 2020;43(6).
58. Anand N, Gorantla VR, Ranjan R, et al. Emotional intelligence: an important skill to learn now more than ever. *F1000Res*. 2023;12:1146.
59. Vila S, Gilar-Corbi R, Pozo-Rico T. Effects of student training in social skills and emotional intelligence on the behaviour and coexistence of adolescents in the 21st century. *Int J Environ Res Public Health*. 2021;18:5408.
60. Xia Q, Qin G, Yang F, et al. The effect of mahjong/bridge intellectual sports on the subjective wellbeing of middle-aged and older adults: an empirical analysis from the mixed cross-section data of CHARLS in China. *Front Public Health*. 2025;13:1552180.
61. Clarkson-Smith L, Hartley AA. The game of bridge as an exercise in working memory and reasoning. *J Gerontol*. 1990;45(6):233-238.
62. Hafdi M, Hoevenaer-Blom MP, Richard E. Multi-domain interventions for the prevention of dementia and cognitive decline. *Cochrane Database Syst Rev*. 2021.
63. Li D. The cognitive benefits of playing contract bridge in elderly patients with dementia. *Int J Psychiatry*. 2024;9(2):1-8.
64. Li R, Ye X, Zhang Y, et al. A review on serious games for dementia care in ageing societies. *IEEE J Transl Eng Health Med*. 2020;8:140041.
65. Malysa M. Playing bridge: dementia prevention or therapy as well. *Int J Psychiatry*. 2022;7(4):186-190.
66. Kletzel SL, Sood P, Negm A, et al. Effectiveness of brain gaming in older adults with cognitive impairments: a systematic review and meta-analysis. *J Am Med Dir Assoc*. 2021;22(11):2281-2288.
67. Stuart A. Brain exercises and dementia. WebMD. 2024.
68. World Health Organization. Child and youth mental health in the WHO European Region. 2025. WHO/EURO:2025-12824-52598-81473.
69. Istituto Superiore di Sanità. Salute Mentale: in Italia la rete dei servizi è articolata, ma criticità su finanziamenti e personale soprattutto al Sud. Published February 13, 2026.
70. Hen-Herbst L, Lamash L, Fogel Y, et al. Mind sports: exploring motivation and use of cognitive strategies in bridge. *Int J Environ Res Public Health*. 2023;20(6):4968.
71. Liu Y, Liu Y, Zhao B, et al. Cognitive mechanisms underlying memory advantages in bridge experts: based on suit categorization and honor card rules. *Behav Sci*. 2025.
72. Dimonte M. The sport of bridge for a sustainable “digital transition.” *Adv Mater Res*. 2026;13:279.