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Policy Brief

The Global Implications of China's Cognitive Enhancement Programs

Human enhancement research in China—military integration, ethical oversight, and global risk implications

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Policy Brief

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Executive Summary

China's rapid advances in cognitive improvement research have brought it to the forefront of a history-making global technology race with far-reaching bioethical, military operational, and international security implications. Backed by national plans such as the Military-Civil Fusion scheme and the 14th Five-Year Plan, China has extensively deepened investments in neurotech, brain-computer interfaces, gene editing, nootropics, and neural performance improvement platforms. These practices go beyond medical or educational settings; they are specially integrated into national security objectives, particularly that of the People's Liberation Army (PLA), where cognitive improvement is designed as a crucial component of emerging warfare capabilities.

Unlike governance structures of OECD countries or linked to the NIH BRAIN Initiative, the cognitive enhancement system in China is regulated under a regime whose operations are shrouded with minimal independent ethical scrutiny. PLA-associated research centers or elite state universities are typically dominated by internal Party organizations or military command chain, and little public record exists of informed consent protocols, dual-use risk assessments, or long-term health monitoring. This invisibility is compounded by the relative lack of Chinese-language neuroenhancement writing and underrepresentation of Chinese researchers in international ethics harmonization efforts.

The global ramifications of this divergence are profound. Asymmetrical use of and access to cognitive enhancement technologies has the potential to jeopardize the creation of destabilizing dynamics on global military equilibrium if human enhancement is routinized in terms of strategic deterrence or war readiness. Moreover, the absence of public ethical standards eludes the development of universal norms of cognitive freedom, mental integrity, and neurodata rule. Unless these inequalities are addressed, they will erode global confidence in neuroscience collaboration, stimulate regulatory arms races, and jeopardize global consensus on human rights protections in enhancement contexts.

This policy brief uncovers the critical ethical, geopolitical, and governance shortcomings surrounding China's cognitive enhancement study programs. It requires an internationally coordinated, pro-active response: one that involves the development of early warning systems for dual-use neurotechnologies, the establishment of models of neurosecurity assessment, and the initiation of multilateral discussion towards codifying limitations on military applications of human enhancement. Only by owning cognitive enhancement as a scientific and a strategic frontier can the world act on confronting the challenges—and opportunities—posed by China's rising ambitions in this area.

Introduction

In the last ten years, the People's Republic of China has become a world leader in cognitive enhancement technology development and deployment. Examples include neural engineering, nootropic substances, brain-computer interfaces (BCIs), gene-editing technologies targeting neurofunction, and systems for neurocognitive training and behavioral optimization. Compared to the majority of western nations that cast cognitive enhancement research into bioethical, biomedical, and civilian umbrellas, China takes a drastically different approach which is firmly grounded in its broader military-civil fusion strategy, a state policy mandating the integration of scientific research and national defense planning. Chinese human enhancement endeavors are thus not just biomedical or academic undertakings—they are national strategic assets.

This rapid convergence of neuroscience, biotechnology, and statecraft can be most clearly observed in China's 14th Five-Year Plan, where brain science and human performance technologies are officially recognized as drivers of national competitiveness and innovation. Falling under this rubric, people and institutions under the PLA umbrella, including defense research institutes and military medical universities, have been allocated large amounts of funding to develop neurotechnological applications for augmenting soldiers, cognitive resilience, and battlefield adaptability. At the same time, top state universities and commercial biotech firms are establishing their own research initiatives in neural modulation, brain-wearable monitoring technology, and AI-based cognitive training systems. These stakeholders often collaborate in adjacent ecosystems with the aid of central and provincial government incentives for progress in "strategic emerging technologies."

Despite the scope and scale of such initiatives, China's governance model for cognitive enhancement is opaque, centralized, and poorly coordinated with international ethical standards. Ethical review panels, where present, are often internal to institutions and answerable to Communist Party hierarchies or the military command. There is no open national neuroethics framework, and no consistent reporting of informed consent protocols, longitudinal safety surveillance, or dual-use impact analysis. That opacity is compounded by limited global cooperation: Chinese research teams in this area often report to closed-access or home-country-only journals, making it difficult for peer review and global scientific scrutiny.

As China fast develops technologies to modify, enhance, or manipulate brain function, the rest of the world needs to grapple with a list of profound questions. How should government-funded human enhancement be regulated? How can global institutions address research conducted under alternate political and ethical regimes? And what risks are there to international security and human rights when neurotechnology becomes a field of strategic competition? This brief seeks to answer these questions through examination of the structure, aspiration, and governance of China's cognitive enhancement programs—and of integrated policy actions that respect the integrity of neuroscience, defend cognitive rights, and support responsible global innovation.

Issues / Policy Gaps

China is advancing cognitive enhancement research with breakneck speed, yet it is doing this in a manner that departs radically from internationally accepted standards of transparency, ethical review, and dual-use risk assessment. The very first paramount concern is the integration of enhancement research into China's military strategy. In contrast to the majority of OECD nations that demand civilian oversight and bioethical constraints, China's People's Liberation Army (PLA) has directly invested in neurocognitive enhancement technologies, often describing them as tools for "cognitive domain operations"—a term used for psychological and neurological steps taken to manage behavior, resilience, and decision-making under high-stress or contested conditions. This intertwinement of war planning and neuroscience research generates a high degree of opacity and raises the prospect of disregard for international norms prohibiting coercive or non-voluntary human experimentation.

A second worry arises from the weak or non-existent institutionalization of ethical oversight. While China does possess ethics committees in certain medical and academic settings, these lack independence from Party authorities and do not have specialist expertise in neuroethics. Furthermore, a lot of the augmentation research, particularly that conducted under military auspices, is shielded from public view. There is no harmonized regulatory protocol for informed consent in cognitive testing with neurostimulation, pharmacological agents, or human-machine interfaces. As a result, neither the rights of test subjects nor the long-term implications of the research are adequately protected.

The third main gap is in data governance. Cognitive enhancement technologies, particularly those involving BCIs and neuroimaging, generate vast volumes of sensitive neural data. However, China lacks a comparable legal regime to the GDPR or other international data protection frameworks that would make neural data a protected category. This lacuna provides room for mass harvesting, centralization, and potential exploitation of neural information by state or commercial actors, especially where predictive modelling of behavior or ideological profiling is involved. Given the significance of data in AI-driven cognitive enhancement platforms, such an unregulated environment involves existential risks to mental privacy and cognitive sovereignty.

Fourth, China's partial international engagement and selective publication further complicate global regulation. Scientific findings are frequently published in domestic journals that are unavailable to foreign researchers or are hidden altogether. This undermines scientific reproducibility, constructive peer review, and international surveillance blind spots. It also fosters an unbalanced environment in which one country can develop and deploy enhancement technologies unencumbered by the burden of worldwide ethical scrutiny, whereas others are constrained by rigorous demands for transparency.

Finally, China's model reflects a geopolitical governance deficit. Existing multilateral treaties and conventions do not squarely address cognitive enhancement as a dual-use technology. There is no binding international regime that limits its militarization or standardizes its ethical governance. As a result, China's conduct—whether strategic or experimental—occurs in a vacuum of enforceable international norms. This not only encourages an international "enhancement race" but also delegitimizes existing neuroethics initiatives that have no parity of enforcement between jurisdictions.

Policy Recommendations

To address this cognitive enhancement gap in global governance, particularly with the highly developed programs of China, this brief proposes a series of multilateral, institutional, and analytical structures. These are not directed at any single country, but to encourage that all countries be governed by universal ethical standards, transparency parameters, and protection of risk structures in the context of powerful cognitive-affecting technologies.

The first recommendation is the creation of an international *Cognitive Enhancement Governance Treaty Dialogue* (CEGTD), initiated under either the OECD or the United Nations umbrella. The organization would not necessitate strict regulatory convergence but would instead offer a baseline treaty discussion based on ethical boundaries, transparency requirements, and usage-case limitations for cognitive enhancement. Particular focus should be placed on demilitarizing enhancement technology and imposing particular limitations on their application in coercive, war-related, or carceral objectives. The debate has to put forward a framework of universal neuroethical standards in a similar way as they were conceptually envisioned in the OECD 2023 Recommendation on Responsible Neurotechnology.

Second, the international community should develop a *Neurosecurity Risk Index* (NRI), a quantitative model for assessing the systemic risk posed by national cognitive enhancement programs. For each country i, the NRI score is defined as:

$$\text{NRI}_i = \alpha \cdot M_i + \beta \cdot E_i + \gamma \cdot T_i + \delta \cdot D_i$$

- M_i: military integration score - E_i: ethical independence score - T_i: transparency and publication openness score - D_i: neural data protection score - $\alpha, \beta, \gamma, \delta$: weighting parameters determined via international consensus

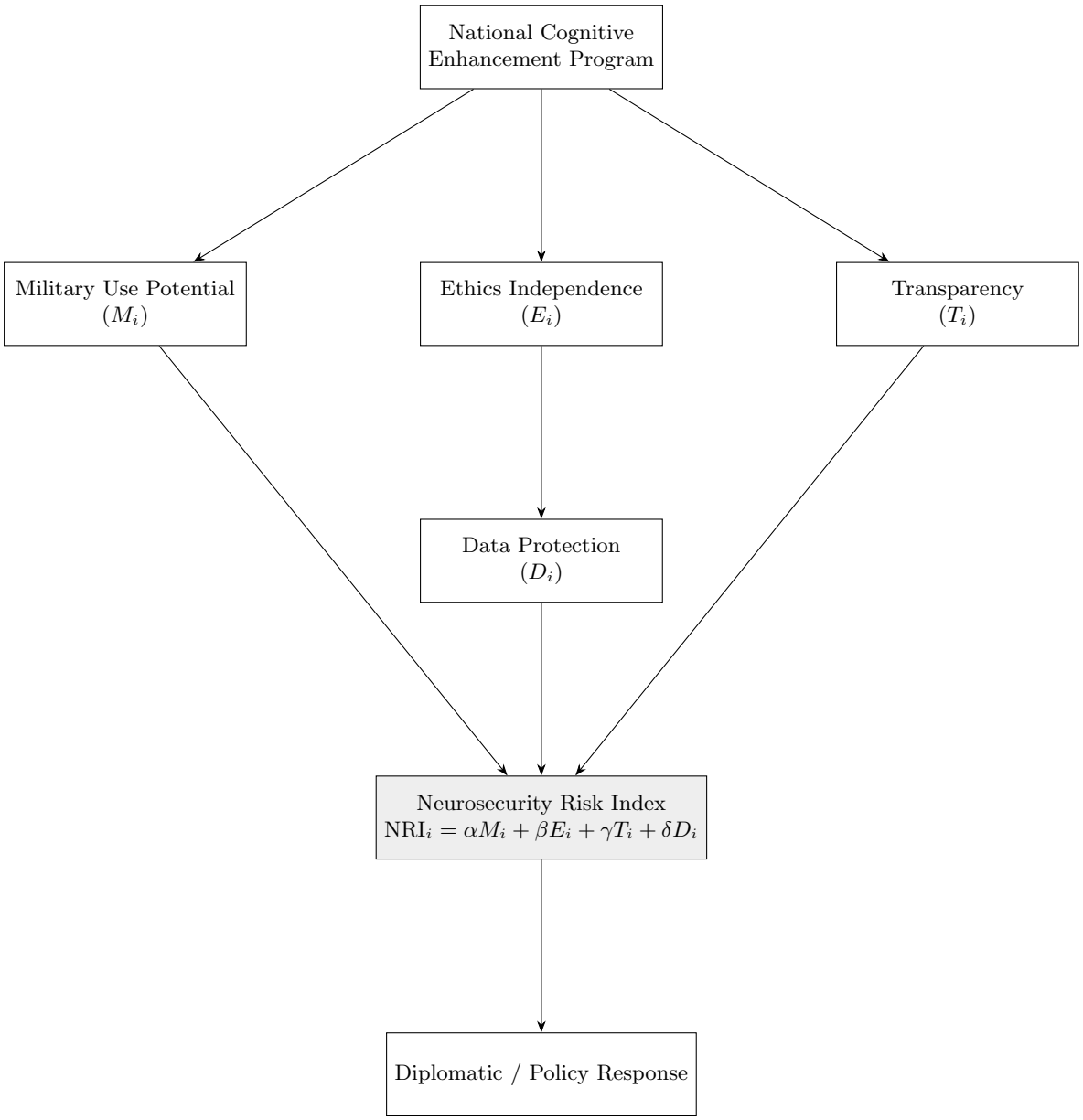
The index produces a risk rating between 0 and 1, where the larger scores represent more internationally consequential programs. The individual ratings can be used to shape international engagement policy, ranging from Track II diplomacy through formal peer review or public disclosure pressure.

Third, a *Cognitive Enhancement Early Warning System* (CE-EWS) as a multilateral early warning system for dual-use neurotechnology. This system would combine open-source intelligence, publication tracking, and funding trend analysis to detect emerging programs that might have military or ethically challenging applications. Notably, this early warning platform must be multilateral and data-driven with inputs from civil society, academia, and neuroethics entities globally.

Fourth, the international scientific community must strengthen Track II diplomacy with Chinese science establishments, including universities, laboratories, and professional groups. This would be aimed at research transparency, open-access publishing, and shared neuroethical standards, particularly in human-subject research. By facilitating technical trust and knowledge sharing below the level of official diplomacy, Track II efforts can plug governance holes without challenging national sovereignty head-on.

Fifth, there should be new controls on current export regimes—such as the Wassenaar Arrangement—to include high-risk cognitive enhancement technologies (such as neural interface chips, neurostimulator firmware, high-resolution neuroimaging systems). The controls should be narrowly tailored to avoid blanket prohibitions without stopping vital dual-use items from being

tracked and reported across borders.



This graph illustrates the data flow for the suggested Neurosecurity Risk Index and subsequent classification for worldwide participation and response. Programs with higher NRI scores would be earmarked for policy action, while lower-risk programs could be on the list for collaborative formulation or information sharing.

Together, these five methods aim to provide the global community with a multi-faceted toolkit of governance—aligning soft and hard power, quantitative study and diplomatic engagement, and transparency incentives with normative architecture. As cognitive enhancement technologies continue to advance under dissimilar regulatory regimes, only such systemic and visionary coordination can ensure that scientific progress does not occur at the cost of ethical coherence or global security.

Conclusion

As China hurries along the path of technological advancements in cognitive enhancement, the world is confronted with a highly developed and urgent issue—how to react to scientific advance deeply ingrained within a strategic, militarized, and morally unclear environment. The stakes are much greater than national interests. China's hybrid of enhancement science and national security ideology can reshape the global trajectory of the development of neurotechnology, both what it does and what it establishes as precedent—consciously or unconsciously.

This policy brief has identified principal governance loopholes in ethical evaluation, dual-use regulation, neurodata protection, and worldwide openness. These loopholes are not merely administrative; they indicate a wider separation of values, risk calculation, and transparency of institutions. Unaddressed, this divergence can create a global competition for mental leadership in which ethical consideration is subordinated to strategic necessity and scientific ambition is severed from public accountability.

To avert this outcome, a worldwide concerted effort is necessary—one that integrates treaty-level dialogue with quantitative models of risk, early warning systems, and approaches to normative convergence. Importantly, the response must not devolve into technological captivity or geo-political rivalry. Rather, it must seek to elevate a collective world norm for cognitive integrity, mental autonomy, and responsibility-focused innovation. Cognitive enhancement will end up shaping the future of human potential; the question is whether that future will be led by transparency, trust, and ethics, or by asymmetry, secrecy, and coercion. The decision has to be made today.

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