Journal of Integrative Neuroscience

J. Integr. Neurosci. **2026**; 25(9): 52204
https://doi.org/10.31083/JIN52204

Opinion

Crossing the Bar of 'Self'—A Hypothesis-Generating Value-Based Framework for Dementia Risk and Resilience

Souvik Dubey[1], Mahua Jana Dubey[2], Samya Sengupta[1], Shambaditya Das[3], Ritwik Ghosh[4], Subhankar Chatterjee[5,*], Julián Benito-León[6,7,8,9,*]

[1]Department of Neuromedicine, Bangur Institute of Neurosciences, IPGMER & SSKM Hospital, 700020 Kolkata, India
[2]Department of Psychiatry, Berhampore Mental Hospital, 742101 West Bengal, India
[3]Department of Neuromedicine, Manipal Hospitals Broadway, 700106 Kolkata, India
[4]Department of General Medicine, Burdwan Medical College & Hospital, 713104 Burdwan, India
[5]Department of Endocrinology & Metabolism, Medical College & Hospital, 700073 Kolkata, India
[6]Department of Neurology, 12 de Octubre University Hospital, 28041 Madrid, Spain
[7]Group of Neurodegenerative Diseases, Hospital Universitario 12 de Octubre Research Institute (imas12), 28041 Madrid, Spain
[8]Network Center for Biomedical Research in Neurodegenerative Diseases (CIBERNED), 28029 Madrid, Spain
[9]Department of Medicine, Faculty of Medicine, Complutense University of Madrid, 28040 Madrid, Spain
*Correspondence: chatterjeeaspiresubhankar.92@gmail.com (Subhankar Chatterjee); jbenitol67@gmail.com (Julián Benito-León)
Academic Editor: Bettina Platt
Submitted: 24 March 2026 Revised: 17 July 2026 Accepted: 5 August 2026 Published: 8 September 2026

Abstract

Contemporary neuroscience increasingly conceptualizes the self as a dynamic neurocognitive process supported by interacting cortical hubs and large-scale networks. In this Opinion, we introduce self-configuration as a provisional, hypothesis-generating construct: a time-bounded, context-sensitive pattern across self-referential appraisal, interoceptive monitoring, autobiographical framing, and self-other orientation. It is not a validated scale, diagnosis, or neural biomarker and must be distinguished empirically from established constructs such as trait neuroticism, rumination, depressive symptoms, and self-transcendence. We use a heuristic continuum between a rigid, self-focused pole and a flexible, prosocial pole. Evidence supports the component psychological processes and network functions, but no study has directly linked the integrated construct to dementia risk or resilience. Accordingly, regional mappings, disease-specific emphases, and candidate manipulations are presented as falsifiable hypotheses rather than mechanisms or clinical recommendations. The framework is intended to guide multimethod construct validation and longitudinal or experimental testing, not to represent an evidence-based model of dementia risk or prevention.

Keywords: self-configuration; cognitive reserve; neurodegeneration; default mode network; salience network; dementia risk and resilience

1. Introduction

The self is best understood as a dynamic neurocognitive process rather than a fixed psychological entity. Here, we use self-configuration as a new, provisional research construct for the context-sensitive organization of four domains: self-referential appraisal, interoceptive monitoring, autobiographical framing, and self-other orientation [1,2,3,4]. The proposed construct is state-like: stable traits and clinical symptoms may affect the probability of a given configuration, but the configuration itself is intended to describe a time-bounded pattern that may vary with context, training, illness burden, and the social environment. We use a neurotic-to-transcendent axis as a heuristic continuum between rigid, self-focused dysregulation and flexible, prosocial self-transcendence [1,2,5,6,7]. This axis is not an exhaustive taxonomy and should not be interpreted as a diagnosis.

Self-configuration is conceptually related to, but is not assumed to be distinct from, established constructs. Trait neuroticism is a relatively stable disposition; rumination is a cognitive process; depressive and anxiety symptoms are clinical states; and self-transcendence describes a family of experiences or orientations. The proposed construct will have scientific value only if it shows reproducible within-person variation and explains variance beyond that explained by these established measures. No validated composite instrument currently exists. We therefore frame this article as a research agenda rather than as an evidence-based model of dementia risk or resilience.

2. Conceptual Status, Provisional Operationalization, and Evidentiary Boundaries

Operationally, self-configuration should be inferred from convergent evidence across multiple domains and modalities, rather than from a single questionnaire item, task, physiological measure, or regional activation. Candidate indicators include momentary or experience-sampling ratings of rumination and self-distancing; interoceptive bias and autonomic regulation; autobiographical memory speci-

ficity and contextual updating; and perspective-taking, empathic accuracy, and social connectedness. A future measurement framework should test reliability, temporal sensitivity, convergent validity, and discriminant and incremental validity beyond trait neuroticism, rumination, depression or anxiety, and self-transcendence.

At the systems level, we focus on the medial prefrontal cortex (mPFC), anterior insula, retrosplenial cortex (RSC), and temporoparietal junction (TPJ) because they contribute to self-reflection, salience and interoceptive processing, autobiographical contextualization, and self-other modeling [3,4,8,9,10,11,12]. These regions are functional anchors, not unique neural markers. Each participates in multiple processes; therefore, inferring a self-configuration from regional activation alone would constitute reverse inference [8]. Strong tests require prespecified tasks, network-level connectivity, behavioral and physiological measures, and appropriate control conditions. The four-hub mapping is thus parsimonious and falsifiable, but provisional.

2.1 Medial Prefrontal Cortex - Reflective Valuation Hub

Evidence-supported basis: The mPFC, a hub within the default mode network (DMN), contributes to self-referential appraisal, valuation, and autobiographical narrative construction [3,4,8]. Rumination is associated with altered DMN/mPFC processing, whereas posterior DMN and hippocampal systems are vulnerable in Alzheimer's disease (AD) [13,14,15]. **Framework hypothesis:** within a convergent state profile, self-evaluative rigidity may be accompanied by perseverative mPFC-DMN engagement, whereas self-distanced, value-based reflection may be accompanied by more flexible recruitment. These patterns are neither specific to self-configuration nor evidence that mPFC activity mediates neurodegeneration.

2.2 Bilateral Anterior Insula - Interoceptive and Salience Hub

Evidence-supported basis: The anterior insula integrates bodily signals with salience detection and attentional switching and is implicated in anxiety-related interoceptive processing [9,10,16,17]. **Framework hypothesis:** threat-biased body monitoring may co-occur with insular hyperreactivity and autonomic arousal, whereas regulated body awareness may co-occur with more adaptive salience switching when broader control and social-cognitive systems are engaged [2,17]. Mindfulness, compassion, and paced-breathing paradigms are therefore candidate experimental probes rather than established methods for changing self-configuration or dementia risk [18,19,20,21,22,23].

2.3 Retrosplenial Cortex - Temporal-Spatial and Autobiographical Integrator

Evidence-supported basis: The RSC contributes to autobiographical memory, spatial orientation, and contextual integration [11,24], and posterior midline dysfunction is documented in prodromal AD [25,26]. **Framework hypothesis:** a rigid pole may be associated with repetitive or overgeneral autobiographical processing, whereas a flexible pole may be associated with greater specificity and recontextualization. No direct evidence currently links these proposed state patterns to RSC activity or AD progression. Structured reminiscence and memory-specificity tasks may be used to test proximal autobiographical outcomes, not disease modification [27,28].

2.4 Temporoparietal Junction - Self-Other and Prosocial Perspective Hub

Evidence-supported basis: The TPJ contributes to self-other distinction, perspective-taking, theory of mind, and aspects of moral cognition [12,29]. Social relationships are associated with cognitive outcomes, and frontoinsular and social-cognitive networks are affected in frontotemporal dementia (FTD) [30,31,32]. **Framework hypothesis:** reduced flexibility in self-other modeling may co-occur with withdrawal and weaker social buffering, whereas flexible perspective-taking may co-occur with prosocial reciprocity. TPJ activation is not a unique marker of either pole, and perspective-taking or compassion tasks should be treated as experimental probes rather than disease-specific interventions [22].

3. Evidence Status, Bidirectionality, and Causal Uncertainty

Table 1 provides a provisional operational map, not a validated classification. The underlying literature is cross-domain and indirect: separate studies link personality, rumination, contemplative practice, social relationships, cognitive reserve, and regional function, but no direct empirical study has established the integrated chain proposed here. Sequential associations should not be interpreted as mediation or mechanism. A rigid/self-focused profile may co-occur with allostatic burden, social isolation, or less flexible network dynamics; conversely, early neurodegenerative change may itself increase affective distress, self-focus, or withdrawal. The literature on personality change is mixed: some studies suggest changes can precede clinical dementia, whereas others report relative stability until mild cognitive impairment (MCI) or dementia, and coordinated analyses indicate that rising neuroticism may emerge as an early signal [33,34,35]. Accordingly, self-configuration could be a correlate, a possible modifier, or a consequence, depending on context and disease stage. Table 2 states construct-level predictions and explicit findings that would weaken the framework.

4. Candidate Correlates and Disease-Specific Hypotheses

Any disease-specific extension should follow, not precede, construct validation. The proposed emphases below are illustrative and non-specific; overlapping symp-

Table 1. Provisional domains and candidate indicators of state-like self-configuration.

Component domain and candidate network anchor	Rigid/self-focused pole: candidate state indicators	Flexible/prosocial pole: candidate state indicators
Self-referential appraisal (mPFC/DMN)	State rumination, self-immersed negative appraisal, and inflexible value integration	Self-distanced reflection, flexible reappraisal, and context-sensitive value integration
Interoceptive monitoring (anterior insula/salience network)	Threat-biased body monitoring, autonomic hyperarousal, and impaired salience switching	Regulated body awareness, adaptive salience switching, and external grounding or compassion
Autobiographical/contextual framing (RSC/posterior midline systems)	Overgeneral or repetitive recall, reduced specificity, and impaired contextual updating	Specific and context-rich recall, autobiographical recontextualization, and narrative flexibility
Self-other orientation (TPJ/social-cognitive network)	Constricted perspective-taking, social withdrawal, and reduced empathic accuracy	Flexible perspective-taking, prosocial reciprocity, and social connectedness

Abbreviations: DMN, default mode network; mPFC, medial prefrontal cortex; RSC, retrosplenial cortex; TPJ, temporoparietal junction. These domains and candidate indicators are intended to support construct validation and assessment of proximal correlates only; they do not establish clinical efficacy, disease modification, or dementia prevention.

Table 2. Construct-validation hypotheses and candidate falsification tests.

Validation or experimental test	Hypothesized result	Result that would weaken the framework
Repeated multimethod assessment across contexts	A coherent but context-sensitive profile across self-report, behavior, autonomic measures, and network connectivity; incremental validity beyond trait neuroticism, rumination, depression/anxiety, and self-transcendence	Low reliability, no cross-modal convergence, or no discriminant or incremental validity
Guided rumination plus interoceptive threat focus vs neutral self-reflection	Greater state rumination and threat ratings, lower heart rate variability, and altered mPFC-anterior insula coupling	Neural differences without corresponding state or behavioral changes, or effects eliminated by prespecified clinical and attentional covariates
Self-distanced autobiographical reappraisal vs immersive recall	Less state rumination, greater autobiographical specificity, and altered RSC-network contextual processing	Only nonspecific mood or expectancy effects, without autobiographical or network-level differences
Compassion or perspective-taking task vs active relaxation control	Greater empathic accuracy and social connectedness with corresponding TPJ/mPFC network changes	Neural change without social-cognitive benefit, or behavioral change without construct-specific convergence
Repeated self-regulation training or neurofeedback	Within-person change in preregistered proximal state, autonomic, and network endpoints; no dementia effect is assumed	Adequate adherence but no dissociable proximal change, or effects explained by attention, expectancy, or general arousal

Abbreviations: DMN, default mode network; mPFC, medial prefrontal cortex; RSC, retrosplenial cortex; TPJ, temporoparietal junction. These are hypothesis-generating tests; no clinical efficacy or dementia-prevention effect is assumed.

toms and network changes are expected across disorders. Key confounds include baseline trait neuroticism, rumination, depressive and anxiety symptoms, attentional load, medication status, sleep, general physiological arousal, and disease severity, all of which should be modeled explicitly rather than absorbed into the proposed construct. In AD, separate literatures support associations among stress, sleep disruption, autobiographical or contextual dysfunction, and vulnerability of posterior DMN–hippocampal systems [14,15,25,26,28,36,37,38], but no evidence establishes self-configuration as a mediator. In Parkinson's disease (PD), autonomic dysregulation and affective burden may be relevant [6], but disease specificity is untested. In FTD, frontoinsular and social-cognitive network involvement provides a rationale for studying self-other processing [32], not for claiming a causal pathway. In established AD, neuroticism-withdrawal may relate to neuropsychiatric symptom expression [39]. Table 3 (Ref. [7,14,15,23,27,28,30,31,36,37]) makes these evidentiary limits explicit; Fig. 1 summarizes the hypothesis-generating framework.

Table 3. Illustrative disease-related hypotheses and current evidentiary limits.

Framework hypothesis	Evidence-supported basis and limitation
Rigid self-focus may co-occur with rumination, sleep disruption, HPA activation, inflammation, and memory vulnerability.	Separate AD-relevant associations exist [14,15,28,36,37]; mediation by self-configuration and effects on disease progression are untested.
Regulated interoception may co-occur with higher heart rate variability and lower perceived stress.	A proximal physiological hypothesis across aging, AD, and PD; no evidence establishes disease modification.
Narrative recontextualization may co-occur with greater autobiographical specificity and contextual updating.	Experimentally testable in aging and MCI [27]; RSC or hippocampal mediation and effects on AD outcomes remain unproven.
Flexible self-other orientation may co-occur with social connection and empathic reciprocity.	Social relationships are associated with dementia risk [30,31], but TPJ mediation and FTD or PD specificity are untested.
Flexible or prosocial profiles may co-occur with cognitive reserve or wellbeing-related factors.	A possible correlate in healthy aging [7,23]; neuroprotection is not established.

Abbreviations: AD, Alzheimer's disease; FTD, frontotemporal dementia; HPA, hypothalamic-pituitary-adrenal; MCI, mild cognitive impairment; PD, Parkinson's disease; RSC, retrosplenial cortex; TPJ, temporoparietal junction. All entries are hypothesis-generating, potentially bidirectional, and non-specific; none represents a validated disease pathway.

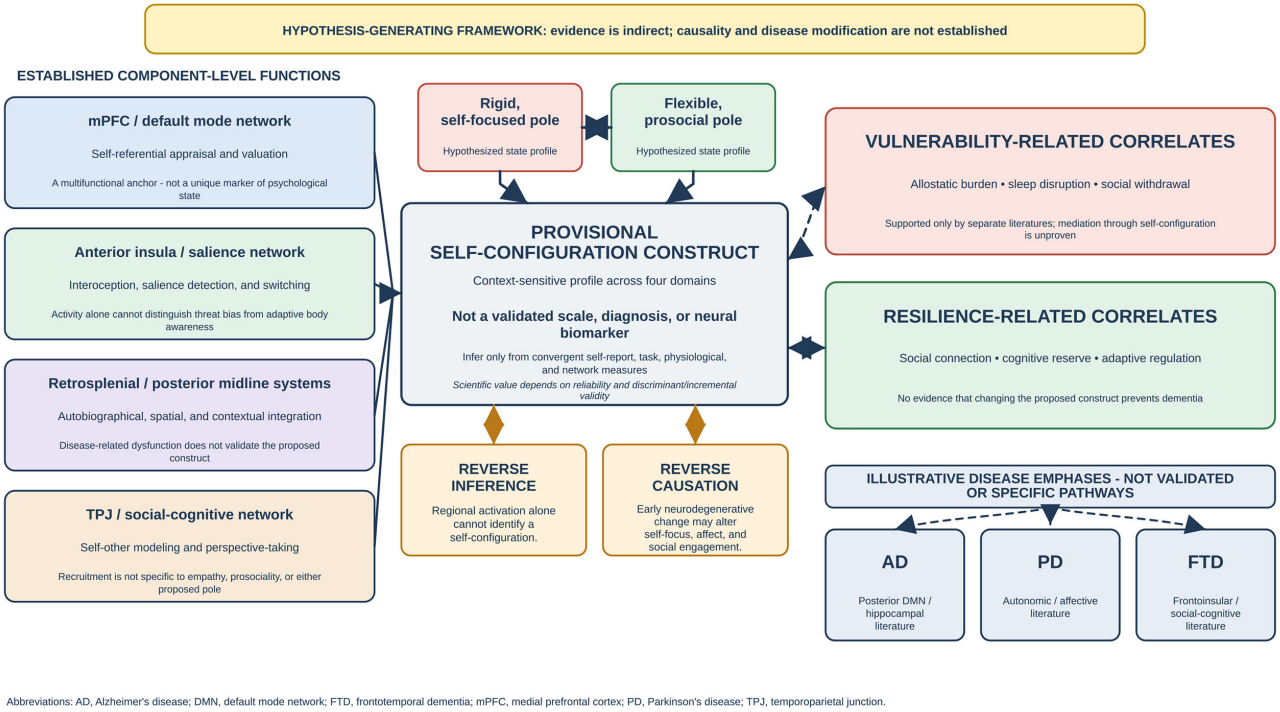

Fig. 1. Hypothesis-generating framework for state-like self-configuration. Boxes at left summarize component-level functions; the central and right-hand pathways are framework-specific hypotheses. Regional activity is not a one-to-one marker and cannot identify a self-configuration on its own (reverse inference). Dashed associations are illustrative, potentially bidirectional, and require longitudinal and experimental validation.

5. Candidate Experimental Manipulations and Monitoring

Because the construct is unvalidated, the following are proposed as laboratory or feasibility manipulations rather than treatments, clinical recommendations, or dementia-prevention strategies. Initial studies should target proximal state, behavioral, autonomic, and network endpoints with active controls, blinding where feasible, expectancy measurement, and adverse-event monitoring. Only after construct validity and reproducible proximal effects are established would longitudinal studies of cognition or disease biomarkers be justified. Candidate manipulations include self-distancing and values-based reappraisal for self-evaluative rigidity; paced breathing, heart rate variability biofeedback, and grounded interoceptive tasks for hypervigilance; structured life review and memory-specificity tasks for autobiographical rigid-

Table 4. Candidate experimental manipulations and proximal exploratory endpoints.

Proposed state feature	Candidate experimental manipulation	Proximal exploratory endpoints
Self-evaluative rigidity / mPFC-DMN emphasis	Self-distancing, values clarification, and guided reappraisal	State rumination, cognitive flexibility, task performance, and mPFC/DMN connectivity
Hypervigilant interoception / anterior insula emphasis	Paced breathing, heart rate variability biofeedback, and externally grounded body-awareness tasks	Heart rate variability, interoceptive threat bias, anxiety or stress, and mPFC-insula connectivity
Autobiographical rigidity / RSC emphasis	Structured life review, photo-cued reminiscence, and autobiographical memory-specificity tasks	Autobiographical specificity, orientation, contextual updating, RSC/hippocampal coupling, and sleep quality
Constricted self-other orientation / TPJ emphasis	Perspective-taking tasks, compassion practice, and dyadic or socially reciprocal activities	Empathic accuracy, social connectedness, and TPJ-related task activation or connectivity

Abbreviations: DMN, default mode network; mPFC, medial prefrontal cortex; RSC, retrosplenial cortex; TPJ, temporoparietal junction. These are research manipulations, not clinical recommendations, and none have been shown to alter dementia risk or disease course.

ity; and perspective-taking, compassion, or dyadic social tasks for social withdrawal [19,20,21,22,27,40]. In MCI, shorter cue-based and caregiver-supported formats may be examined for feasibility rather than presumed superior. The candidate manipulations and corresponding proximal exploratory endpoints are summarized in Table 4.

6. Limitations and Research Agenda

The framework has five central limitations: self-configuration is novel and unvalidated; its boundaries with established constructs are uncertain; the evidence synthesis is indirect and heterogeneous; regional mappings are vulnerable to reverse inference; and disease-specific pathways and intervention effects have not been demonstrated. Accordingly, this article should not be interpreted as an evidence-based model of dementia risk, resilience, diagnosis, or prevention.

A staged validation program is required. First, a multimethod measurement model should demonstrate reliability, temporal sensitivity, convergent validity, and discriminant and incremental validity. Second, preregistered within-person experiments should determine whether the proposed profiles can be shifted and whether such shifts produce specific proximal changes beyond mood, attention, expectancy, and trait effects. Third, longitudinal cohorts should test temporal ordering and prediction. Only if these stages are successful should clinical trials examine cognitive trajectories or disease biomarkers. Null results—especially failure to show distinctness from neuroticism, rumination, depression or anxiety, or self-transcendence—should count against the construct.

Mindfulness and contemplative practices are illustrative probes within this agenda, not assumed solutions. Comparative studies could test whether introspective, compassion-based, and socially embedded practices yield distinct profiles and tolerability among individuals prone to rumination [2,18,22]. The framework's intended contribution is therefore modest: to organize clearly delimited, falsifiable questions about self-related processing and neurodegenerative vulnerability.

Author Contributions

SD, MJD, SS, ShD, RG, SC, and JBL contributed to the conception and design of the article, development of the conceptual framework, review and interpretation of the relevant literature, drafting of the manuscript, and critical revision for important intellectual content. All authors read and approved the final manuscript. All authors have participated sufficiently in the work and agreed to be accountable for all aspects of the work.

Ethics Approval and Consent to Participate

Not applicable.

Acknowledgment

Not applicable.

Funding

This research received no external funding.

Conflicts of Interest

The authors declare no conflicts of interest.

References

[1] Yaden DB, Haidt J, Hood RW Jr, Vago DR, Newberg AB. The varieties of self-transcendent experience. Review of GENERAL PSYChology. 2017; 21: 143–160. https://doi.org/10.1037/gpr0000102

[2] Vago DR, Silbersweig DA. Self-awareness, self-regulation, and self-transcendence (S-ART): a framework for understanding the

neurobiological mechanisms of mindfulness. Frontiers in Human Neuroscience. 2012; 6: 296. https://doi.org/10.3389/fnhum.2012.00296

[3] Buckner RL, Andrews-Hanna JR, Schacter DL. The brain's default network: anatomy, function, and relevance to disease. Annals of the New York Academy of Sciences. 2008; 1124: 1–38. https://doi.org/10.1196/annals.1440.011

[4] Qin P, Northoff G. How is our self related to midline regions and the default-mode network? NeuroImage. 2011; 57: 1221–1233. https://doi.org/10.1016/j.neuroimage.2011.05.028

[5] Terracciano A, Aschwanden D, Passamonti L, Toschi N, Stephan Y, Luchetti M, et al. Is neuroticism differentially associated with risk of Alzheimer's disease, vascular dementia, and frontotemporal dementia? Journal of Psychiatric Research. 2021; 138: 34–40. https://doi.org/10.1016/j.jpsychires.2021.03.039

[6] Terracciano A, Aschwanden D, Stephan Y, Cerasa A, Passamonti L, Toschi N, et al. Neuroticism and Risk of Parkinson's Disease: A Meta-Analysis. Movement Disorders : Official Journal of the Movement Disorder Society. 2021; 36: 1863–1870. https://doi.org/10.1002/mds.28575

[7] Stern Y. Cognitive reserve in ageing and Alzheimer's disease. The Lancet. Neurology. 2012; 11: 1006–1012. https://doi.org/10.1016/S1474-4422(12)70191-6

[8] Lieberman MD, Straccia MA, Meyer ML, Du M, Tan KM. Social, self, (situational), and affective processes in medial prefrontal cortex (MPFC): Causal, multivariate, and reverse inference evidence. Neuroscience and Biobehavioral Reviews. 2019; 99: 311–328. https://doi.org/10.1016/j.neubiorev.2018.12.021

[9] Craig ADB. How do you feel–now? The anterior insula and human awareness. Nature Reviews. Neuroscience. 2009; 10: 59–70. https://doi.org/10.1038/nrn2555

[10] Menon V, Uddin LQ. Saliency, switching, attention and control: a network model of insula function. Brain Structure & Function. 2010; 214: 655–667. https://doi.org/10.1007/s00429-010-0262-0

[11] Vann SD, Aggleton JP, Maguire EA. What does the retrosplenial cortex do? Nature Reviews. Neuroscience. 2009; 10: 792–802. https://doi.org/10.1038/nrn2733

[12] Saxe R, Kanwisher N. People thinking about thinking people. The role of the temporo-parietal junction in "theory of mind". NeuroImage. 2003; 19: 1835–1842. https://doi.org/10.1016/s1053-8119(03)00230-1

[13] Berman MG, Peltier S, Nee DE, Kross E, Deldin PJ, Jonides J. Depression, rumination and the default network. Social Cognitive and Affective Neuroscience. 2011; 6: 548–555. https://doi.org/10.1093/scan/nsq080

[14] Greicius MD, Srivastava G, Reiss AL, Menon V. Default-mode network activity distinguishes Alzheimer's disease from healthy aging: evidence from functional MRI. Proceedings of the National Academy of Sciences of the United States of America. 2004; 101: 4637–4642. https://doi.org/10.1073/pnas.0308627101

[15] Buckner RL, Snyder AZ, Shannon BJ, LaRossa G, Sachs R, Fotenos AF, et al. Molecular, structural, and functional characterization of Alzheimer's disease: evidence for a relationship between default activity, amyloid, and memory. The Journal of Neuroscience : the Official Journal of the Society for Neuroscience. 2005; 25: 7709–7717. https://doi.org/10.1523/JNEUROSCI.2177-05.2005

[16] Paulus MP, Stein MB. An insular view of anxiety. Biological Psychiatry. 2006; 60: 383–387. https://doi.org/10.1016/j.biopsych.2006.03.042

[17] Tisserand A, Philippi N, Botzung A, Blanc F. Me, Myself and My Insula: An Oasis in the Forefront of Self-Consciousness. Biology. 2023; 12: 599. https://doi.org/10.3390/biology12040599

[18] Fox KCR, Nijeboer S, Dixon ML, Floman JL, Ellamil M, Rumak SP, et al. Is meditation associated with altered brain structure? A systematic review and meta-analysis of morphometric neuroimaging in meditation practitioners. Neuroscience and Biobehavioral Reviews. 2014; 43: 48–73. https://doi.org/10.1016/j.neubiorev.2014.03.016

[19] Brewer JA, Worhunsky PD, Gray JR, Tang YY, Weber J, Kober H. Meditation experience is associated with differences in default mode network activity and connectivity. Proceedings of the National Academy of Sciences of the United States of America. 2011; 108: 20254–20259. https://doi.org/10.1073/pnas.1112029108

[20] Tang YY, Ma Y, Fan Y, Feng H, Wang J, Feng S, et al. Central and autonomic nervous system interaction is altered by short-term meditation. Proceedings of the National Academy of Sciences of the United States of America. 2009; 106: 8865–8870. https://doi.org/10.1073/pnas.0904031106

[21] Hölzel BK, Carmody J, Vangel M, Congleton C, Yerramsetti SM, Gard T, et al. Mindfulness practice leads to increases in regional brain gray matter density. Psychiatry Research. 2011; 191: 36–43. https://doi.org/10.1016/j.pscychresns.2010.08.006

[22] Mascaro JS, Rilling JK, Tenzin Negi L, Raison CL. Compassion meditation enhances empathic accuracy and related neural activity. Social Cognitive and Affective Neuroscience. 2013; 8: 48–55. https://doi.org/10.1093/scan/nss095

[23] Willroth EC, Pfund GN, Rule PD, Hill PL, John A, Kyle K, et al. A review of the literature on wellbeing and modifiable dementia risk factors. Ageing Research Reviews. 2024; 99: 102380. https://doi.org/10.1016/j.arr.2024.102380

[24] Chen X, Wei Z, Wolbers T. Repetition Suppression Reveals Cue-Specific Spatial Representations for Landmarks and Self-Motion Cues in the Human Retrosplenial Cortex. eneuro. 2024; 11: ENEURO.0294–23.2024. https://doi.org/10.1523/ENEURO.0294-23.2024

[25] Nestor PJ, Fryer TD, Ikeda M, Hodges JR. Retrosplenial cortex (BA 29/30) hypometabolism in mild cognitive impairment (prodromal Alzheimer's disease). The European Journal of Neuroscience. 2003; 18: 2663–2667. https://doi.org/10.1046/j.1460-9568.2003.02999.x

[26] Minoshima S, Giordani B, Berent S, Frey KA, Foster NL, Kuhl DE. Metabolic reduction in the posterior cingulate cortex in very early Alzheimer's disease. Annals of Neurology. 1997; 42: 85–94. https://doi.org/10.1002/ana.410420114

[27] Villasán Rueda A, Sánchez Cabaco A, Mejía-Ramírez M, Justo-Henriques SI, Carvalho JO. Improvement of the Quality of Life in Aging by Stimulating Autobiographical Memory. Journal of Clinical Medicine. 2021; 10: 3168. https://doi.org/10.3390/jcm10143168

[28] Diekelmann S, Born J. The memory function of sleep. Nature Reviews. Neuroscience. 2010; 11: 114–126. https://doi.org/10.1038/nrn2762

[29] Decety J, Lamm C. The role of the right temporoparietal junction in social interaction: how low-level computational processes contribute to meta-cognition. The Neuroscientist : a Review Journal Bringing Neurobiology, Neurology and Psychiatry. 2007; 13: 580–593. https://doi.org/10.1177/1073858407304654

[30] Kuiper JS, Zuidersma M, Oude Voshaar RC, Zuidema SU, van den Heuvel ER, Stolk RP, et al. Social relationships and risk of dementia: A systematic review and meta-analysis of longitudinal cohort studies. Ageing Research Reviews. 2015; 22: 39–57. https://doi.org/10.1016/j.arr.2015.04.006

[31] Livingston G, Huntley J, Liu KY, Costafreda SG, Selbæk G, Alladi S, et al. Dementia prevention, intervention, and care: 2024 report of the Lancet standing Commission. Lancet (London, England). 2024; 404: 572–628. https://doi.org/10.1016/S0140-6736(24)01296-0

[32] Seeley WW, Crawford RK, Zhou J, Miller BL, Greicius MD. Neurodegenerative diseases target large-scale human brain networks. Neuron. 2009; 62: 42–52. https://doi.org/10.1016/j.neuron.2009.03.024

[33] Balsis S, Carpenter BD, Storandt M. Personality change precedes clinical diagnosis of dementia of the Alzheimer type. The Journals of Gerontology. Series B, Psychological Sciences and Social Sciences. 2005; 60: P98–P101. https://doi.org/10.1093/geronb/60.2.p98

[34] Terracciano A, An Y, Sutin AR, Thambisetty M, Resnick SM. Personality Change in the Preclinical Phase of Alzheimer Disease. JAMA Psychiatry. 2017; 74: 1259–1265. https://doi.org/10.1001/jamapsychiatry.2017.2816

[35] Yoneda T, Rush J, Graham EK, Berg AI, Comijs H, Katz M, et al. Increases in Neuroticism May Be an Early Indicator of Dementia: A Coordinated Analysis. The Journals of Gerontology. Series B, Psychological Sciences and Social Sciences. 2020; 75: 251–262. https://doi.org/10.1093/geronb/gby034

[36] McEwen BS. Protective and damaging effects of stress mediators. The New England Journal of Medicine. 1998; 338: 171–179. https://doi.org/10.1056/NEJM199801153380307

[37] Heneka MT, Carson MJ, El Khoury J, Landreth GE, Brosseron F, Feinstein DL, et al. Neuroinflammation in Alzheimer's disease. The Lancet. Neurology. 2015; 14: 388–405. https://doi.org/10.1016/S1474-4422(15)70016-5

[38] Wang J, Liu S, Liang P, Cui B, Wang Z. Aberrant functional connectivity between the retrosplenial cortex and hippocampal subregions in amnestic mild cognitive impairment and Alzheimer's disease. Brain Communications. 2024; 7: fcae476. https://doi.org/10.1093/braincomms/fcae476

[39] Dorey JM, Rouch I, Padovan C, Boublay N, Pongan E, Laurent B, et al. Neuroticism-Withdrawal and Neuroticism-Volatility Differently Influence the Risk of Neuropsychiatric Symptoms in Alzheimer's Disease. Journal of Alzheimer's Disease : JAD. 2020; 74: 79–89. https://doi.org/10.3233/JAD-190884

[40] Krause F, Kogias N, Krentz M, Lührs M, Goebel R, Hermans EJ. Self-regulation of stress-related large-scale brain network balance using real-time fMRI neurofeedback. NeuroImage. 2021; 243: 118527. https://doi.org/10.1016/j.neuroimage.2021.118527