Ecological-collective-flourishing (e-co-flourishing): a framework to guide innovation and research

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Converging ecological and social crises have exposed the limits of prevailing models of human progress, highlighting the need for more inclusive and interdisciplinary approaches to advancing wellbeing and flourishing across human and non-human life. In this Personal View, we propose an ecological-collective-flourishing (e-co-flourishing) approach, whereby one's own human flourishing is pursued along with that of natural ecosystems and their collective and individual constituents. We offer a heuristic translational framework that includes a methodological approach; guiding principles; and proposed programme theory in terms of hypothesised outcomes, pathways of change (mechanisms), key contextual factors (moderators), and intervention characteristics. This framework aims to bridge theory to real-world applications of e-co-flourishing interventions that are effective, scalable, and promote change through targeted mechanisms of action. We present Mindfulness-Based Cognitive Therapy-Balanced Living for Us and the Earth's Ocean (MBCT-BLUE) as an illustrative application of this framework to outline how the framework can be used to identify, refine, develop, and evaluate interventions with e-co-flourishing potential. We also provide definitions of key conceptual terms and proxy measurements. Practitioners, researchers, and decision makers working at the interface of mental health, public health, sustainability, and planetary health can use this framework and its resources to guide emerging research and innovation.

Introduction

Converging ecological and social crises have exposed the limits of prevailing models of human progress, highlighting the need for more inclusive and interdisciplinary approaches to advancing wellbeing and flourishing across human and non-human life.[1–8] Existing approaches–such as One Health,[9] EcoHealth,[10] and planetary health[11]–rightly foreground the interdependence of human health with non-human collectives, ecosystems, and the planet. Yet, in practice, these agendas have largely been mobilised to mitigate environmental determinants of human disease and ill-health, rather than to promote improvement across species and systems. Moreover, these frameworks remain largely confined to health—a valuable but small subset of the broader conditions that enable a life to go well. Health has been defined as a "state of complete physical, mental, and social wellbeing and not merely the absence of disease and infirmity".[12] Although this expansive definition recognises multiple dimensions of wellbeing, in practice, health remains primarily oriented towards bodily, mental, and social functioning. Health is, therefore, foundational to living well, but the stage at which flourishing begins rather than ends. To build on this foundation, we propose ecological-collective-flourishing (e-co-flourishing), an approach for advancing human flourishing in ways that also sustain and enhance the flourishing of non-human collectives and ecosystems, based on evidence from a preprint paper.[13] E-co-flourishing emphasises relative net-positive improvements across species and systems, understanding flourishing as an ongoing, evolving, and context-dependent process rather than a universal ideal to be achieved. This process-oriented view offers a more sustainable and inclusive approach to progress by recognising diverse pathways to flourishing across interconnected human and ecological systems.

A 2024 paper by Moore and colleagues[13] has established the conceptual foundations of e-co-flourishing. However, a translational framework to guide the identification, refinement, development, and evaluation of e-co-flourishing interventions is yet to be articulated. In this Personal View, we address this translational gap by operationalising e-co-flourishing into a pragmatic and heuristic framework for action. Drawing on principles from intervention science and translational research,[14] our aim is to provide the following: a methodological approach and guiding principles for designing and evaluating e-co-flourishing interventions; and a programme theory outlining hypothesised outcomes, pathways of change (mechanisms), contextual factors (moderators), and intervention characteristics. Together, these contributions provide a practical foundation for researchers, practitioners, and decision makers working at the interface of mental health, public health, sustainability, and planetary health to translate e-co-flourishing into practice. The key conceptual terms are defined in the panel.

Methodology and guiding principles

We developed the e-co-flourishing framework using an abductive, interdisciplinary approach that combined iterative theory development with stakeholder engagement. Abductive approaches integrate existing theoretical understanding (top–down) with novel empirical and experiential insight (bottom–up), enabling reciprocal refinement between conceptual development and real-world perspectives.[24] Top–down processes included iterative literature searches of relevant journal articles and systematic reviews, review of theoretical texts and archival documentation of pre-existing

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Panel: Key conceptual terms and definitions

Co-flourishing
A condition whereby one entity is collaboratively flourishing with one or more other entities, pursuing the others' flourishing alongside its own.[15]

Collective
A group or assembly of individual entities. A collective can vary in size and composition, ranging from small groups to large organisations or communities. Two collectives of interest include populations and organisations. Populations are simple sets of members, the properties (including flourishing) of which are simple aggregations or averages of the corresponding properties of their members. Organisations are systems comprising members and their interactions, which have emergent properties (including flourishing) that are not straightforwardly reducible to the individual properties of their members.[16,17]

Ecosystem
The biological community together with the abiotic environment in which the community is situated (ie, the non-living factors and processes that influence it).[17]

Ecosystem flourishing
The state in which natural ecosystems present resilience, species diversity, and self-regulating ecological processes. Ecosystem flourishing reflects the ability of ecosystems to sustain themselves over time, providing essential services and resources to support life and maintain biodiversity.[18]

Ecological-collective-flourishing
The practice of pursuing one's own human flourishing, as defined previously, along with the flourishing of natural ecosystems and their collective and individual members. Ecological-collective-flourishing (E-co-flourishing) is to engage in modes of flourishing that aim to promote and enhance, rather than hinder, the flourishing of other natural entities and collectives.[13]

Human flourishing
Having, being, and doing what constitutes living well–which is realisable through dynamic and evolving processes that encompass multiple areas of life, such as psychological (eg, mental health, positive affect), social (eg, close and positive relationships, social connectedness), physical (eg, energy and vitality), values-related (eg, meaning, purpose), and environmental (eg, safety, security, access to health care and education).[19–21] This multifaceted conception integrates both subjective and objective components and occurs at both the individual and collective levels.

Human health
A state of complete physical, mental, and social wellbeing and not merely the absence of disease or infirmity.[12]

Human wellbeing
Subjective evaluations of psychological, physical, social, and environmental domains. Psychological wellbeing refers to the capacity to express one's feelings in a helpful and productive way and acknowledge one's worth; physical wellbeing refers to maintaining habits and routines that allow one to take care of one's body (eg, through nutrition and proper sleep); social wellbeing refers to maintaining healthy relationships with others; and environmental wellbeing refers to the ability to consider one's community and surroundings in relation to one's wellbeing.[22,23]

Non-human
Entities, beings, or objects that are not human. For the purposes of our research, we have chosen a narrower definition: a living entity or being or a group of living entities or beings of any species besides *Homo sapiens*.[13]

interventions, and consultation with experts across diverse disciplines–including ecology, botany, geography, philosophy, organisational wellbeing, psychiatry, psychology, public and patient involvement, and inclusive design. Bottom–up processes involved public, patient involvement, engagement, and participation (PPIEP) activities, including commentary from members of the Neuroscience, Ethics, and Society (NEUROSEC) Young People's Advisory Group, who were actively involved in PPIEP activities related to the wider research team. Insights from both streams were iteratively synthesised to refine the framework. This abductive process was guided by the following three core principles: epistemic humility—recognising the value of multiple knowledge systems and the place of biomedical epistemologies alongside other ways of knowing; inclusion—reflecting commitments to diversity, accessibility, respect, and social justice; and scientific, logical, and methodological rigour—emphasising on transparent standards of evidence and operationalisable, measurable constructs. Further methodological detail is provided in the appendix (pp 2–7).

See Online for appendix

Programme theory

Programme theory provides a structured account of how an intervention is expected to generate change, through

what mechanisms, under which contextual conditions, and towards which outcomes. Clarifying these components supports the development, refinement, and evaluation of interventions in real-world settings. Consistent with established translational and evaluation frameworks—including the Medical Research Council,[14,25] the US Centers for Disease Control and Prevention,[26] case study research,[27] and realist evaluation[28]—our programme theory focuses on four core elements: targeted outcomes, hypothesised mechanisms of change, contextual moderators, and intervention characteristics. Adapted from Urie Bronfenbrenner's Ecological Systems Theory,[29] we conceptualise context across four key levels: individual (ie, a single entity; eg, human, nonhuman), microsystem (ie, the immediate environments and relationships; eg, school or neighbourhood greenspace), mesosystem (ie, the interconnection of different microsystems; eg, the interconnection of school and neighbourhood greenspace), and macrosystem (ie, the broader cultural, societal, and ecological systems; eg, policies, governance, culture, economy, societal values). Within the e-co-flourishing framework, these levels are expected to interact in a complex system and factors at each level can be explored as contextual moderators,[30] requiring a plurality of mid-level theories that in culmination speak to an overarching understanding.[31] We also extend these levels (individual, microsystem, mesosystem, and macrosystem) to clarify the entry points at which e-co-flourishing interventions can be targeted. Taken together, this programme theory provides a translational scaffold for identifying, refining, developing, and evaluating e-co-flourishing interventions.

E-co-flourishing framework

In outlining the programme theory for e-co-flourishing, we begin by establishing hypothesised outcomes. This outline is driven by the theoretical understanding that the effectiveness of interventions will be contingent on the extent to which they target hypothesised outcomes. Through reverse translation, the mechanisms that account for change in these hypothesised outcomes will be explored, along with the intervention characteristics and contextual factors (moderators) that can affect this relationship (intervention–mechanism–outcome).[30]

Outcomes

Key domains

The key domains for e-co-flourishing include human and ecosystem flourishing. Human flourishing is a concept that spans multiple disciplines, each offering a unique perspective on what living a fulfilling and well-rounded human life means. The main disciplines that have defined human flourishing include positive psychology,[20] ethics and moral philosophy,[19] existential philosophy,[32] sociology,[33] public health and religion,[21] and welfare economics.[34] Popular definitions of human flourishing, predominantly from positive psychology, have emphasised on optimal psychological wellbeing.[35–38] Aligned with more modern interpretations of human flourishing,[21,38] we elect a definition that both challenges this notion of optimisation and looks beyond the psychological domain (see panel). We argue that human flourishing is the pursuit of having, being, and doing what constitutes a life well lived. Human flourishing considers individuals across the entire flourishing spectrum (low to high) and life span. Therefore, there are no restrictions in terms of age, sex, psychiatric history, or use of medications. Unlike health, flourishing is not defined by the absence of any given dimension (eg, disease, disorder) but instead by the pursuit of meeting or exceeding thresholds across multiple areas of life, such as psychological (eg, mental health, positive affect), social (eg, close and positive relationships, social connectedness), physical (eg, energy and vitality), values (eg, meaning, purpose, mastery, virtue, knowledge), and environmental (eg, safety, security, access to health care and education). Unlike optimisation, which implies maximising or perfecting each dimension, this definition of human flourishing recognises that individuals and collectives can flourish in different ways and to varying degrees and across time, without needing to attain an ideal or optimal level in all areas simultaneously.

Ecosystem flourishing, as another key domain of e-co-flourishing, is an inherently interdisciplinary concept that has been discussed across fields, such as ecology, environmental sciences, conservation biology, sustainability science, and geography.[39–44] We define ecosystem flourishing primarily as an ecological concept referring to the state and processes through which natural ecosystems present resilience, species diversity, and self-regulating ecological processes. Ecosystem flourishing reflects the ability of ecosystems to sustain themselves over time, providing essential services and resources to support life and maintain biodiversity[18] (panel). As with human flourishing, we expect a flourishing ecosystem to be dynamic rather than static. Ecosystem flourishing unfolds through ongoing processes that span multiple dimensions, such as biodiversity, sustainability, interconnectedness, safeguarding evolutionary processes, and ecological vibrancy and energetics (or energy flow). These dimensions are specific to context and vary across ecosystems and timescales; thus, ecosystem flourishing, similar to human flourishing, does not require simultaneous optimisation across domains.

Given the early stage of this field's development, no comprehensive outcome measure currently captures both human flourishing and ecosystem flourishing simultaneously. To advance methodological innovation, the framework delineates these two overarching domains and their shared features: individual versus collective, multidimensional, dynamic, and relational. These domains serve as provisional constructs to inform proxy measurement development, enabling systematic evaluation and progressive refinement of metrics that can more comprehensively assess e-co-flourishing outcomes over time. Through robust PPIEP activities, such as participatory codesign, advisory groups representing the target population can

help to select, adapt, and prioritise the most relevant and feasible measurements for human and ecosystem flourishing. To balance these bottom–up insights with top–down methodological rigour, we recommend using validated measurements wherever possible. Measuring ecosystem flourishing is often restricted by what is observable or easily measurable; our understanding and interpretation will likely be biased by what we know to exist and our anthropocentric perspectives. To address these challenges, e-co-flourishing research should draw on multidisciplinary methods and diverse knowledge systems—such as ecological knowledge and local stewardship practices, especially those of Indigenous peoples, who are custodians of 80% of the world's biodiversity[45,46]—to identify appropriate metrics. Details on the existing measurement tools are given in the appendix (pp 8–33).

Key features

The key features of e-co-flourishing, which apply to each key domain, include the following: individual versus collective flourishing; multidimensional flourishing; dynamic flourishing; and relational flourishing. Flourishing can be appreciated on individual and collective levels.[38] In the human domain, individual-level flourishing concerns one person. Collective-level flourishing, on the other hand, concerns an aggregate of human individuals (eg, several adults) or another human-centred collective, organisation, or grouping variable (eg, a community of adults). In the ecosystem domain, individual-level flourishing concerns one non-human entity (eg, one singular kelp), whereas collective-level flourishing concerns an aggregate of non-human entities (eg, several kelp) or another non-human-centred collective, organisation, or grouping variable (eg, a kelp community).

Flourishing can be understood as multidimensional, whereby several dimensions could play a role. In the human domain, pre-existing frameworks,[12,47–49] and extant research[21,38,50,51] support the following dimensions: psychological (eg, mental health, positive affect), social (eg, close and positive relationships, social connectedness), physical (eg, energy and vitality), values-related (eg, meaning, purpose), and environmental (eg, safety, financial security, access to health care, and education). For ecosystem flourishing (admittedly through a human lens), theory and evidence[40–42,44,52] have supported the following dimensions: biodiversity (ie, the variety and variability of life), sustainability (ie, maintaining essential functions and processes), interconnectedness (ie, the complex web of interactions and dependencies), safeguarding evolutionary processes (ie, processes or functions that have been passed down ecological communities and populations over time), and ecological vibrancy and energetics (ie, the flow and transformation of energy between ecosystems).

Flourishing is also dynamic[53]—it is likely to evolve over time and is less about achieving a particular static optimal endpoint or state and more about the pursuit of a net gain in flourishing across multiple areas of life. In the human domain, the dynamic aspect of flourishing can manifest in terms of some dimensions evolving over time and during different life stages. For instance, a younger adult could be less concerned about the environmental dimension (eg, financial security) than an older adult owing to different priorities and life stages. In the ecosystem flourishing domain, biodiversity and ecosystem vibrancy in aquatic systems often shift with the seasons. For example, in temperate coastal lagoons, warmer months typically support greater phytoplankton and invertebrate activity and higher overall biological productivity, whereas cooler seasons are characterised by reduced growth, changes in species composition, and increased emphasis on decomposition and nutrient recycling processes.[54] The evaluation of dynamic flourishing could manifest through a repeated-measures design, whereby measures of different flourishing dimensions could be collected across multiple timepoints to examine how shifts occur over time.

Lastly, we argue that flourishing can be relational or interdependent,[21,53] which means that the flourishing of one entity or collective can influence—and be influenced by—the flourishing of another. For example, the flourishing of coastal human communities is closely intertwined with that of aquatic ecosystems, such that ecological degradation can undermine livelihoods and psychosocial wellbeing, whereas practices that support ocean stewardship can, in turn, foster human flourishing while also addressing downstream benefits for aquatic ecosystems, through increased pro-environmental attitudes and behaviours.

Mechanisms

With a better understanding of mechanisms, interventions and initiatives can be identified, developed, refined, and evaluated in such a way to target key mechanisms and subsequent outcomes.[30] In the context of e-co-flourishing, we are primarily interested in mechanisms that sit at the interface of e-co-flourishing domains (human flourishing and ecosystem flourishing). These relationships can be operationalised across the following three levels: mechanisms that explain the effects of natural ecosystems on human flourishing (level 1); mechanisms that explain the effects of humans on natural ecosystem flourishing (level 2); and bidirectional mechanisms that affect both human and natural ecosystem flourishing simultaneously and possibly in feedback loops (level 3).

An umbrella review[55] synthesised empirically evaluated mechanisms across these three levels and identified evidence solely for level 1 mechanisms. The review provided preliminary support for a range of cross-domain mechanisms in relation to human flourishing outcomes: psychological (eg, attention restoration, stress reduction), social (eg, social cohesion), physical (eg, physical activity), and environmental (eg, reduced environmental stressors and enhanced environmental quality). Other related reviews,[56–62] contemporary conceptual frameworks and texts,[63–67] and bottom–up evidence (appendix pp 4–5), have provided further support for these cross-domain pathways and have

inspired the exploration of additional pathways—psychological (eg, mindfulness, appreciation, awareness, compassion, a sense of awe or gratitude, self-care, emotional regulation, achievement, mastery), social (eg, connection to self, others, nature; pro-environmental behaviours; a sense of belonging), physical (eg, strength, flexibility), values-related (eg, purpose and agency, insight, knowledge), and environmental (eg, perceived safety). Emerging research provides further support for cross-domain mechanisms—such as connection, sensory engagement, agency, and compassion—through qualitative analyses of hybrid greenspaces in secure psychiatric care settings (based on evidence from a preprint).[68] However, both the theoretical and empirical literature remain heavily weighted towards mechanisms in the ecosystem– human flourishing direction (level 1), with substantial gaps in relation to human–ecosystem flourishing and bidirectional mechanisms (level 2–3). Moreover, even for putative mechanistic targets at level 1, the evidence base is nascent and there is little adherence to contemporary guidance on the conceptualisation, testing, and reporting of mechanisms and mediation,[69–71] such that these mechanisms are best regarded as promising starting points that require further empirical validation. For decision makers, this fact implies that existing mechanisms can be used to inform theory of change and indicator selection but should not be treated as definitive causal accounts.

Moderators

Another key question for programme theory relates to the contextual factors that can affect both e-co-flourishing mechanisms and outcomes. As mentioned, contextual factors can be represented across different levels (individual, microsystem, mesosystem, and macrosystem).[29] These factors can interact within a complex system and be explored as hypothesised moderators, defined as factors that shape, constrain, or enhance intervention–outcome relationships.[30] In line with the Medical Research Council guidance for complex interventions,[14] considering context is essential for explicating how mechanisms could be differentially activated across contexts, ultimately supporting stronger causal inference and enhanced scalability. Top–down literature[58,61,65,72–74] and bottom–up evidence (appendix pp 4–5) has identified potential contextual factors relevant to e-co-flourishing; for instance, baseline flourishing, socioeconomic factors, sex, age, accessibility (distance) to nature, positive childhood experiences, quality (eg, water quality, biodiversity levels), environmental stressors (eg, presence of pollution, noise), cultural norms, collective values, climate policy, climate change and vulnerability, and perceived safety of space.

Achieving complete e-co-flourishing in which all human and non-human entities and their collectives flourish simultaneously is, of course, practically not possible. This fact mirrors the recent discussions of human flourishing, which emphasise that flourishing is an ongoing, imperfect, and context-dependent process rather than a fixed state of attainment.[21] In this view, e-co-flourishing is also best understood as a continual pursuit. Therefore, translating this concept into research and practice requires identifying actionable points of leverage. We argue that a pragmatic entry point for an e-co-flourishing intervention is at the meso-level. As described previously, the meso-level includes different microsystems, such as a school or greenspace. However, to promote e-co-flourishing, meso-level interventions need to include both human and non-human collectives (which together refer to a more-than-human collective). To ultimately reach a net gain in flourishing, we believe targeting natural ecosystems (defined in the panel) is an appropriate focus. This approach represents a pragmatic, not reductive, adaptation of the broader e-co-flourishing construct as it aims to not restrict the conceptual scope of e-co-flourishing but rather provides a feasible and analytically tractable level for intervention design, implementation, and measurement. We also believe that this approach provides a practical foundation for addressing inevitable trade-offs and ethical tensions at a level that appreciates a more-than-human collective or system. By working at this scale, interdependencies, competing needs, and potential tensions become easier to identify than when attention is restricted to individuals or smaller collectives. Rather than seeking to eliminate such tensions, the framework positions them as central to the research process–focusing on their identification, negotiation, and potential resolution in ways that address mutually sustaining flourishing.

Intervention characteristics

E-co-flourishing interventions can include policies, programmes, practices, technologies, or system-level innovations designed to generate mutually sustaining flourishing across human and ecological systems. Although these interventions could take diverse forms, several core characteristics can be considered. To align with process evaluation and implementation frameworks,[14,75,76] key functions or characteristics that can be consistently delivered across interventions include the following: fidelity (ie, the extent to which the intervention corresponds to its outlined intentions); dosage or exposure (ie, the amount of the intervention that was received); quality (ie, the extent to which components of the intervention were delivered well); participant responsiveness or engagement (ie, the extent to which the intervention engages its target audience); and programme differentiation (ie, the extent to which the programme theory underpinning the intervention is distinct from alternative interventions). Moreover, additional features informed by bottom–up evidence (appendix pp 4–5), aligned with our guiding ethical principles, can be considered. For instance, safety (through minimisation of harm and unpleasant experiences); inclusivity, accessibility, and reach; and facilitators and barriers. Accounting for these characteristics is essential as they shape both mechanisms and outcomes and, therefore, play an important role in understanding how the intervention can be improved, adapted, and scaled within diverse settings.

To meaningfully advance this area of work along the translational research pathway, one needs to consider intervention characteristics, along with hypothesised outcomes, mechanisms, and key contextual moderators. Of note, one single study cannot simultaneously address all variables (intervention characteristics, outcomes, mechanisms, and moderators) and, therefore, the evaluation will likely occur over the course of multiple intervention studies. To illustrate how this framework can be applied to identify, refine, develop, and evaluate e-co-flourishing interventions, we have outlined an illustrative proof-of-concept example in the following section. For a full illustration of the e-co-flourishing framework, see the figure.

An illustrative e-co-flourishing application

Mindfulness-Based Cognitive Therapy-Balanced Living for Us and the Earth's Ocean (MBCT-BLUE) is a proposed research programme presented herein as an illustrative proof-of-concept example of an intervention with e-co-flourishing potential. MBCT-BLUE builds on Mindfulness-Based Cognitive Therapy (MBCT), an evidence-based intervention integrating mindfulness training with cognitive behavioural therapy, originally developed to prevent depressive relapse through an eight-week, group-based format combining weekly sessions and daily home practice.[77] Meta-analyses show the effectiveness of MBCT compared with no intervention and maintenance antidepressant treatment.[78] Supported by a robust evidence base, MBCT has been systematically adapted across populations and contexts using established frameworks,[79,80] resulting in a family of programmes with growing evidence for improving mental health and broader indicators of flourishing in general population samples.[71,81] Early work[63,82,83] and emerging interventions such as Mindfulness-Based Sustainable Transformation[82] also provide preliminary evidence that mindfulness can foster pro-environmental attitudes and behaviours, with potential downstream implications for natural ecosystems. However, these strands have not yet been explicitly integrated within an e-co-flourishing framework. MBCT-BLUE seeks to address this gap through codesign with stakeholders and evaluation of its acceptability, effectiveness, and mechanisms of change.

The MBCT-BLUE programme is situated within a coastal aquatic ecosystem, conceptualised as an interconnected system comprising biological communities (eg, marine organisms) and abiotic conditions (eg, water, light, temperature) that are physically, perceptually, and socially accessible to coastal human collectives. MBCT-BLUE operates at the mesosystem level by targeting both human collectives (eg, adult communities in coastal regions) and the aquatic ecosystems with which they are connected to. Drawing on the e-co-flourishing framework (figure) and MBCT theory and evidence, MBCT-BLUE is hypothesised to promote human flourishing in the short term and contribute to ecosystem flourishing over longer timescales. In the short term, anticipated mechanisms include increases in mindfulness, compassion (for self, others, and nature), and ocean literacy, alongside shifts in pro-environmental attitudes. These changes are expected to support downstream behavioural pathways relevant to ecosystem flourishing outcomes (eg, improved biodiversity, water quality). Contextual moderators spanning multiple levels—including individual (eg, age, sex, baseline flourishing), microsystem (eg, access to aquatic environments, pollution exposure), mesosystem (eg, cultural values, local environmental governance), and macrosystem (eg, climate change vulnerability)—will be examined. Key intervention characteristics to be assessed include dosage and engagement (eg, session attendance and home practice), acceptability (eg, perceived credibility), safety (including adverse or unpleasant experiences), and implementation facilitators and barriers (informed by qualitative interviews). An abductive methodological approach will be used to iteratively refine outcome measures, ensuring that evaluation remains conceptually grounded, context-sensitive, and aligned with lived experience.

As a proposed application of the framework, MBCT-BLUE is intended to illustrate how existing mental health interventions might be refined and extended to support e-co-flourishing and generate cobenefits across human and ecological systems. If feasible and acceptable, then such approaches could provide one potential model for integrating mental health promotion, public health, and environmental sustainability within shared flourishing-oriented interventions.

Discussion

In this Personal View, we propose a pragmatic, heuristic, and theoretically grounded framework to guide the identification, refinement, development, and evaluation of e-co-flourishing interventions. The primary contribution of this framework is a translational programme theory that integrates key outcome domains (human flourishing and ecosystem flourishing); potential mechanisms that can contribute to flourishing outcomes (eg, attention restoration, stress reduction, social cohesion, physical activity, enhanced environmental qualities, reduced environmental stressors); contextual moderators that can shape mechanisms and outcomes (eg, baseline flourishing, socioeconomic status, biodiversity loss, climate change); and intervention characteristics (eg, fidelity, dosage, quality, engagement, safety, inclusivity, acceptability; figure). In addition, the framework proposes a pragmatic meso-level entry point for operationalising ecosystem flourishing through key dimensions such as biodiversity, sustainability, interconnectedness, safeguarding evolutionary processes, and energy flow. These components do not constitute an exhaustive taxonomy but represent the most plausible and relevant constructs emerging from existing theory and evidence, with the expectation that they will evolve as empirical data and stakeholder perspectives accumulate. Another outcome of this Personal View is a summary of key conceptual and scientific terms and existing measurement tools, helping the advancement of

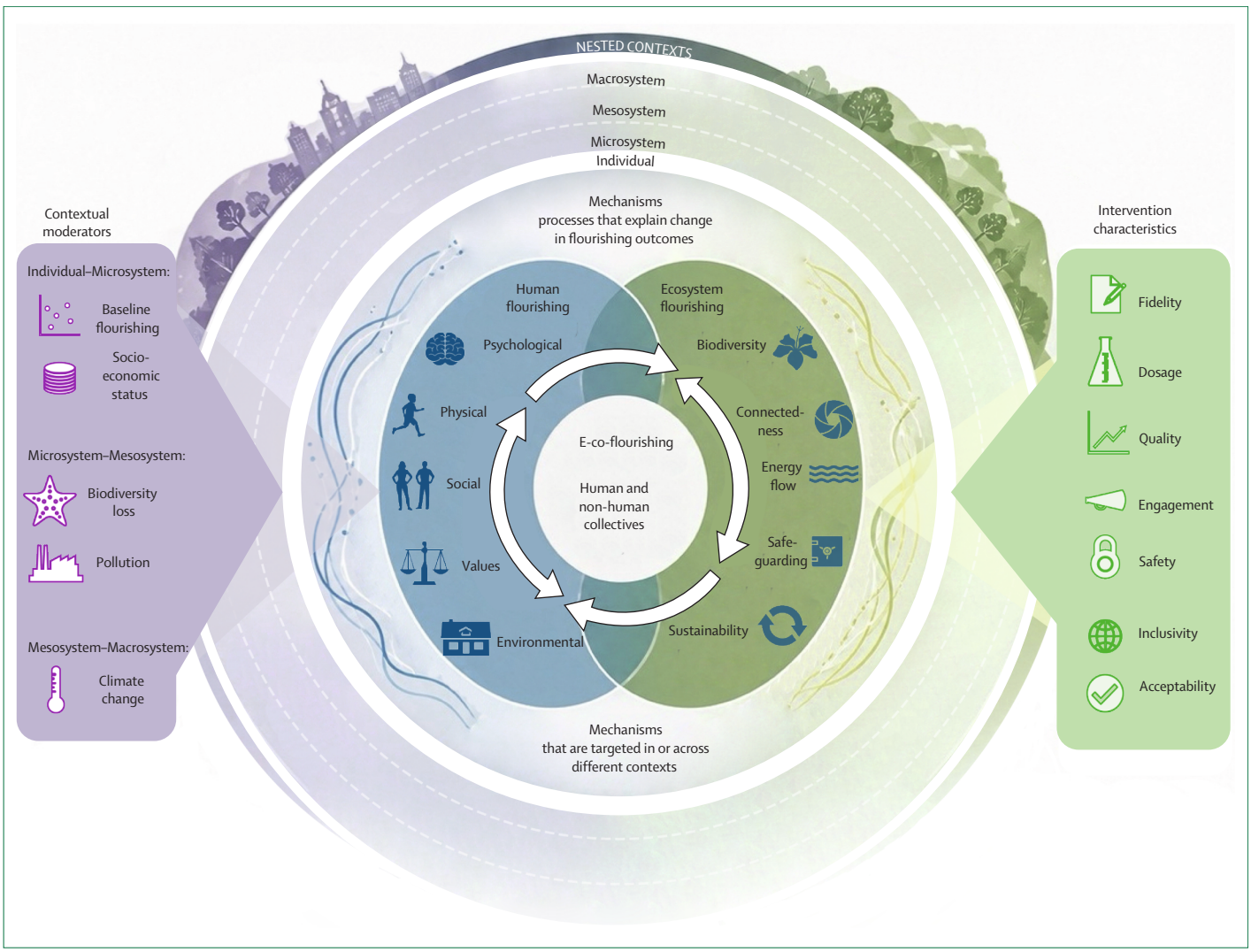


Figure: **E-co-flourishing framework**

Key outcomes of e-co-flourishing (human flourishing and ecosystem flourishing) and their dimensions are highlighted. Mechanisms are conceptualised as processes that explain change in flourishing outcomes and can be targeted in or across different contexts. These nested contexts (individual, microsystem, mesosystem, and macrosystem) situate e-co-flourishing within broader ecological and social systems. Contextual moderators represent factors that can shape, constrain, or enhance mechanisms and outcomes, with examples provided across contexts (eg, from individual to microsystem, microsystem to mesosystem, and mesosystem to macrosystem). Key intervention characteristics (including fidelity, dosage, quality, engagement, safety, inclusivity, and acceptability) could also influence the mechanisms and outcomes of e-co-flourishing. The framework is intended as a heuristic and translational conceptual model to guide theory development, research, and intervention design; accordingly, arrows and directional relationships depicted in the figure are illustrative and do not imply definitive causal pathways. Ecological-collective-flourishing=e-co-flourishing.

e-co-flourishing research and innovation (appendix pp 8–33). Given the early stage of e-co-flourishing research and the complexity of human–ecosystem interdependencies, these components need to be examined pluralistically,[31] using diverse perspectives (subjective and objective), methodologies (eg, PPIEP and co-production, observational and experimental research), statistical approaches (eg, multilevel models), and disciplinary insights.

A central takeaway is that e-co-flourishing is inherently complex and cannot be addressed within a single study or intervention. Rather, the framework is intended as a scaffold for a cumulative and iterative research agenda, in which different studies progressively examine specific elements of the programme theory, including outcomes, mechanisms, moderators, and intervention characteristics. At its current stage, this work sits early in the translational research pathway, with priorities including refining programme theory, engaging stakeholders, identifying key uncertainties, and exploring scalability and economic considerations.[14] Future research could strengthen the methodological foundations of the framework by testing hypothesised mechanisms longitudinally and experimentally, to better establish temporal sequencing and causal inference. For example, longitudinal cohort studies, randomised trials, and systems-modelling approaches could help to clarify how mechanisms interact dynamically across ecological and social contexts over time. Emerging advances[84,85] in artificial intelligence also offer new possibilities

for operationalising the e-co-flourishing framework by modelling complex human–ecosystem interdependencies and adapting interventions across contexts. Artificial intelligence-driven approaches can help to integrate evidence from systematic reviews[55] by modelling dynamic feedback loops, supporting scalability and optimisation across diverse social and ecological settings.

Several other areas could advance this work further. One involves drawing on and extending pre-existing frameworks to deepen conceptual and applied understanding. For instance, the e-co-flourishing framework aligns with recent efforts to reorganise the Sustainable Development Goals for behavioural science, such as the WISER framework,[86] which groups Sustainable Development Goals into wellbeing, inclusivity, sufficiency, empowerment, and resilience to support planetary health-oriented interventions. Although WISER offers a high-level organising lens, e-co-flourishing explicitly links human and ecosystem flourishing and provides a programme theory to guide design and evaluation. Our emphasis on identifying context-dependent thresholds through participatory approaches and guiding principles, such as inclusion and epistemic humility, can be viewed as a translational expression of WISER's sufficiency and empowerment pillars within the context of e-co-flourishing. In future applications, WISER, in addition to other related models, such as the inner–outer transformation model,[63] could serve as complementary frameworks to inform refinement and implementation. In parallel, considering non-human needs and satisfiers[87,88] will be instrumental in advancing both measurement and intervention development.

Of note, full achievement of e-co-flourishing among all human and non-human collectives and individuals is arguably utopian, since efforts unfold within complex, value-laden contexts shaped by competing priorities, scarce resources, and political agendas. Trade-offs[89,90] are, therefore, inevitable, raising ethical dilemmas about whose flourishing is prioritised and how outcomes are defined and governed. We do not suggest that these tensions can be eliminated, rather there is an imperative to strive for relative improvements in overall flourishing and to identify alignments between goals that might otherwise seem in conflict through reflexive, inclusive, and context-sensitive collaboration across human and ecological systems. We further acknowledge that some communities might reject e-co-flourishing approaches. In such contexts, the ethical response is not to universalise or enforce the framework, but to honour community sovereignty and be prepared to substantially adapt or forego an intervention where the intervention conflicts with local values, risks perpetuating colonial dynamics, or is perceived as potentially harmful.

Some limitations and considerations warrant attention. The proposed meso-level approach has its limits: local improvements might not capture broader consumption spill-over effects, underscoring the need for critical education and citizen-science initiatives that help individuals to examine how everyday practices affect more distant human and more-than-human systems.[91] Participatory methods also face conceptual and methodological challenges. Recent work in mental health science calls for a more explicit science of patient and public involvement and engagement, with clearer theoretical foundations specifying when, how, and at which stages of the research cycle participatory approaches are most appropriate.[92] Within this context, the framework encourages participatory approaches to identify target outcomes, mechanisms, moderators, and intervention characteristics, while recognising that the timing and intensity of such engagement should remain a focus of the e-co-flourishing research agenda. Importantly, participatory processes could surface difficult questions, including competing community values, divergent priorities between human and ecosystem needs, and disagreements about how to balance potential risks and benefits. Although such challenges cannot be fully resolved in advance, being open about these dilemmas and ensuring that decisions are made through fair, transparent discussions is essential. Moreover, to date, adherence to contemporary guidance on the conceptualisation, testing, and reporting of mechanisms and mediation in complex interventions has been low.[69–71] In this Personal View, we explicitly propose a programme theory that orients future research towards rigorous mechanistic investigation. Through reverse translation, the mechanisms that account for change in priority outcomes can be examined alongside the intervention features and contextual factors that shape these relationships, and used to refine hypotheses, measures, and study designs over time.

The e-co-flourishing framework and accompanying resources are intended as living tools that stakeholders can use to guide ongoing research and innovation. In doing so, we aim to lay the groundwork for a robust translational pathway capable of addressing intertwined flourishing for both human and non-human collectives and systems. Ultimately, an e-co-flourishing approach underscores the need to move beyond narrowly health-focused or mitigation-oriented strategies towards a more expansive and equitable vision of sustainable progress, in which the flourishing of human and non-human collectives is pursued as a shared and interdependent goal.

Contributors

SM, IS, and WK conceptualised the Personal View and methodology; these authors along with all the remaining coauthors (JM, KW, JM-M, VH, AMvdV, TL, HZ, MR, EA, JSB, WF, LT, MB, CT, YM, and KM) reviewed the content of the Personal View and provided comments and edits on the original and subsequent drafts. All authors have reviewed the final manuscript and approved it for submission.

Declaration of interests

We declare no competing interests.

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