

## REVIEW ARTICLE

# Generalized psychology and human wellness in the era of artificial intelligence: A review

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## ABSTRACT

As the development of artificial intelligence (AI), a generalized psychology is emerging that encompasses the minds and behaviors of humans, animals, and intelligent agents. In the era of AI, cognition and well-being are increasingly shaped by human-AI interaction, so the framework of a generalized object of psychology must expand from human individuals and animals to the intelligent agents and human wellness. Moreover, we highlight human advantages in the era of AI, including Aesthetics, Creativity, and Empathy (ACE), and their measurable outcomes and boundary conditions. Regarding AI for wellness, next, we then explore hybrid intelligence across multiple domains, such as mental health and healthcare, education, work, and social relationships. In addition, we discuss cross-cutting governance considerations, such as trust calibration, bias control, privacy-by-design, cultural alignment, in line with emerging global guidance and reporting standards. Overall, we aim to link theory, measures, applications, and governance to verifiable gains in human wellness.

**Keywords:** generalized psychology, aesthetics creativity and empathy, human wellness, human- artificial intelligence collaboration, governance

## INTRODUCTION

Psychology has long been concerned with the scientific study of mind, experience, and behavior. Since Wundt, it has increasingly developed as a discipline grounded in systematic observation and measurement. (Wundt, 1897). Rapid advances in artificial intelligence (AI) now press on those foundations, reshaping what we mean by mind and behavior. A "generalized psychology" is increasingly discussed as a broad perspective in which machines, too, are treated as entities displaying mind and behavior (Wu & Peng, 2025; Lake *et al.*, 2017). By adopting a 'behavior-first' and 'as-if' stance, we apply psychological measurement and behavioral analysis to

intelligent agents to predict interaction outcomes, without necessarily attributing biological consciousness to silicon-based systems. This shift raises classic but urgent questions: Can constructs such as motivation, intention, or emotion be justifiably extended to artificial systems, and if so, on what evident grounds? Importantly, psychology has long studied observable behavior without requiring access to inner consciousness; AI systems—whether or not they index awareness—remain legitimate targets of psychological inquiry (Demszky & Liu, 2023).


Current debates often polarize between defensive essentialism, which narrows definitions of human nature, and

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techno-utopian claims that portray AI as superhuman. Both obscure the lived reality of symbiosis in which humans and artifacts co-constitute cognition (Song & Lin, 2025). In this context, dignity and autonomy are better treated as evolving properties of human-AI collaboration (Wu & Peng, 2025), and governance should preserve responsibility by designing robots as tools within human-led systems rather than as moral patients (Bryson, 2010; Bryson, 2019).

Methodologically, caution is warranted: Fluent outputs can invite anthropomorphism (Mitchell, 2019). A proportionate approach keeps constructs like "motivation" or "emotion" as "as-if" descriptors—predictive, functional terms rather than literal attributions of inner experience (You, 2021). In this review, we include both humans and artificial agents as targets of observation and intervention, without presuming machine consciousness. We analyze capacities (*e.g.*, reasoning, language, social influence), their effects on wellness, and hybrid intelligence. In this way, psychology's strengths—measurement, causal inference, intervention science, and ethics—can guide work in the era of human-AI collaboration (Ke *et al.*, 2025).

Traditional psychology has long treated the self and internal mental states as functional constructions that enable prediction, coordination, and coherent social interaction. Rather than assuming that inner states are literal entities, contemporary self-research conceptualizes the self as a socially shaped, functional interface that supports reflexive awareness, interpersonal participation, and agentic control (Baumeister, 2011). Extending this view, Swann and Buhrmester (2012) argue that the self operates as a "functional fiction": People attribute intentions, emotions, and motivations to agents because doing so facilitates explanation, coordination, and social regulation, even when such states cannot be directly verified.

In human-AI collaboration, these assumptions reappear in as-if form. Although AI lacks genuine inner experience or a biological self, users routinely treat models as if they possessed intentions, emotions, or stable dispositions. This stance is functional: It enables prediction, collaboration, role assignment, and trust calibration in hybrid intelligence systems (Song & Lin, 2025; Wu & Peng, 2025).

## AI AS SOCIAL AGENT-LIKE SYSTEMS

In the era of AI, cognition is best understood as extending beyond the brain and distributed across social, cultural, and technological systems (Clark & Chalmers, 1998). Rather than debating machine "inner states", we adopt a behavior-first, as-if stance: Use constructs like

motivation or emotion for prediction, without claiming literal mind (Mitchell, 2019). Within this frame, humans retain dignity, autonomy, and responsibility, while AI systems serve as the social agents embedded in human-led institutions (Bryson, 2010; Bryson, 2019; Wu & Peng, 2025). We next examine how human advantages—ACE—are renegotiated and extended in collaborative human-AI settings.

With intelligent agents becoming part of everyday work and communication, human experience and self-understanding are increasingly shaped through human-AI collaboration. This is a shift from merely seeking to understand human cognition to examining how human-AI collaboration evolves, with both sides influencing each other. Through the advancement of AI technologies, which are constantly improving, human capacities and uniquely human traits—such as empathy, creativity, and aesthetic judgment—are being renegotiated; rather than fixed essences, they are open to revision depending on the tools humans use (Wu & Peng, 2025).

We next examine how human advantages—Aesthetics, Creativity, Empathy (ACE)—are renegotiated and extended in collaborative human-AI settings. These three components not only represent basic human experience but also mark areas in which AI can either elevate or threaten the potential of human capacities (Wu & Peng, 2025). The following parts highlight these dimensions and discuss how AI might enhance or diminish human potential.

To make ACE actionable, it should be treated as a set of outcome dimensions and design constraints. At the user level, ACE can be measured with established self-report scales (*e.g.*, aesthetic pleasure and meaning, creative self-efficacy and exploration, perceived empathy and social connectedness) and with behavioral indicators (*e.g.*, choice, persistence, diversity of ideas, help-seeking). At the system level, ACE can be operationalized through evaluative benchmarks such as authenticity and meaning preservation, novelty and diversity of generated options, and relational safety (*e.g.*, appropriate escalation, refusal of harmful advice, and non-manipulative persuasive framing). Embedding such metrics into evaluation supports more transparent empirical assessment of "human advantage."

### **Aesthetics**

Besides aesthetic experience being rooted in feeling and culture, human capacity remains distinctive even as the generative creative process is increasingly mediated by machines and reshapes workflows. Empirical evidence demonstrates that both visual quality and output speed can be boosted through these tools, improving ideation and transforming the original creative pipeline (Noy & Zhang, 2023; Epstein & Hertzmann, 2023). Yet a gap

persists: Producing aesthetic forms is not the same as undergoing aesthetic experience. To operationalize this distinction, research should employ metrics such as perceived profundity and willingness to pay (WTP) to quantify the "authenticity discount" when AI involvement is disclosed. Philosophers argue that "mass AI-art"—outputs produced with minimal human authorship—can loosen the ties between intention, accountability, and meaning that people often prize in works of art today (Nannicelli, 2025). Audience studies echo this tension: When identical images are labeled as AI-generated, viewers reliably downgrade perceived creativity, profundity, and WTP; conversely, cues of human authorship elevate value even when perceptual quality is comparable (Bellaiche *et al.*, 2023; Horton *et al.*, 2023). Consequently, design constraints must include mandatory attribution labeling and cultural narrative alignment, ensuring that AI-assisted aesthetic products are presented not as autonomous creators but as tools embedded in human-led meaning-making processes (Nannicelli, 2025). In short, AI can accelerate making, but interpretation and valuation still hinge on human judgment.

### **Creativity**

Human creativity is still framed as a distinctively human capacity for setting goals and assigning meaning, while in practice generative AI often serves as a high-leverage collaborator: Randomized and field evidence shows assistance from ChatGPT-like tools boosts quality and speeds output for both professional and creative writing, shifting time from drafting to revision and selection (Brynjolfsson *et al.*, 2025; Noy & Zhang, 2023). For ideation and composition, model suggestions can elevate judged creativity—measurable *via* standard divergent-thinking metrics such as fluency and originality scores (Koivisto & Grassini, 2023)—but at the population level, they may compress style space. To address this, research can operationalize and monitor "collective diversity loss," a metric evaluating the reduction in semantic variance of novel content over time (Doshi & Hauser, 2024). Benchmark studies comparing humans with GPT-4 on divergent-thinking tasks report mixed results—some find humans still outperform AI on classic tasks, others show GPT-4 surpassing human averages—highlighting that outcomes depend on task design and on whether we assess "creative potential" versus creative achievement (Hubert *et al.*, 2024; Koivisto & Grassini, 2023). Across these results, one theme holds: Human intent and curation are decisive. Consequently, a key practical implication is "human-in-the-loop" goal setting, ensuring AI functions strictly as a generator of variations under human-defined parameters. AI tools can rapidly supply breadth and stimuli, but originality, appropriateness, and cultural resonance still hinge on human judgment about which ideas to pursue, combine, and stand behind (Epstein & Hertzmann, 2023).

### **Empathy**

Empathy is foundational for human social life, and recent blinded evaluations show that large language models sometimes produce responses rated as more empathetic than clinicians' replies—measurable *via* validated clinical ratings of "expressed empathy"—evidence of credible expressed empathy rather than genuine felt emotion (Ayers *et al.*, 2023; Sorin *et al.*, 2024). On outcomes, short and structured uses of AI for support can help: In experiments and field studies, consumer-focused "AI companions" have reduced feelings of loneliness, and a randomized trial of a culturally adapted conversational cognitive-behavioral therapy (CBT)-style chatbot lowered loneliness among Chinese university students (De Freitas *et al.*, 2025; Wang *et al.*, 2025). At the same time, longer-term evidence suggests that heavy use or certain modes (*e.g.*, specific voice settings or highly personal topics) may coincide with higher loneliness and dependence over several weeks. This points to a critical "dosage-dependency" metric for evaluating wellness outcomes; thus, dosage and design matter. Taken together, the literature suggests an "assist, don't replace" stance: Design constraints must therefore enforce intensity caps on interaction frequency and clear handoffs to human care when risk thresholds are met, preserving the reciprocity and depth unique to human relationships. This approach also supports what we call an "individuality of thought", in which AI augments reflection without supplanting human agency.

In practice, AI expands means, but people retain ends. Evidence from randomized and field studies shows generative tools reliably increase output quality and speed in professional writing and service work—especially for lower-baseline contributors—yet originality, judgment, and cultural fit still hinge on human selection and authorship (Brynjolfsson *et al.*, 2025; Noy & Zhang, 2023). Empathy, likewise, can be expressed convincingly by models, but its accountability and reciprocity remain human. Designing for ACE, therefore, means using AI to widen the expressive range, diversify prompts and perspectives, and free time for reflection—without offloading authorship, responsibility, or relational depth.

## **AI FOR HUMAN WELLNESS**

If human experience is co-constituted with technological scaffolds, the implications of aesthetics, creativity, and empathy extend beyond individual traits and become visible in the hybrid arrangements of people and AI in clinics, classrooms, teams, and platforms. Accordingly, this review focuses less on the isolated mind and more on how human–AI collaboration shapes wellness across these institutional settings. In these arrangements,

models surface signals, draft records, route attention, and pre-structure choices; they do not replace agency so much as extend what becomes feasible and visible. In these arrangements, models surface signals, draft records, route attention, and pre-structure choices; they do not replace agency so much as extend what becomes feasible and visible. When AI outputs enter decision-making processes, they directly influence actions, such as steering resources, reshaping documentation, or shifting focus from composition to revision. This blurs the lines between measurement and intervention. Psychology's task, then, is empirical and civic at once: Observe how these hybrids behave *in situ*, test what helps or harms across institutions, and leave judgment and accountability with people even as assistance scales. This stance—extension rather than substitution, measurement that informs action, and human-in-the-loop control points—aligns with the hybrid-self view (Song & Lin, 2025) and with dignity-centered arguments about responsibility in the AI era (Wu & Peng, 2025), while also fitting what recent evidence and guidance show: Language-based observation can capture classroom dynamics that surveys miss (Demszky *et al.*, 2023), generative tools reliably shift productivity and the distribution of contributions in knowledge work (Noy & Zhang, 2023), disclosure and labeling shape trust even when content quality is held constant (Ayers *et al.*, 2023; Reis *et al.*, 2024), and high-stakes deployments are expected to retain human oversight and transparent reporting under emerging standards (Collins *et al.*, 2024). Read this way, AI for social life highlights how AI assistance translates into action inside institutions, when personalization supports belonging rather than substitutes for it, and design governance so those affected by automated judgments can understand them and challenge them. The following sections examine these dynamics within four critical domains: Clinical care, education, work, and social relationships.

### **AI-enabled assessment and intervention in mental health care**

Previous studies on subjective wellness, life satisfaction and human flourishing mainly relied on self-reported questionnaires and often combined longitudinal follow-up surveys. Although these methods remain at the core, they are constrained by recall bias and limited ecological validity (Diener *et al.*, 2018). The advancements in AI—especially the development of large language models (LLMs)—offer new opportunities for real-time, personalized and context-sensitive assessment of wellness (Mohr *et al.*, 2017). Nowadays, LLMs can analyze various sources of natural language, including diary entries, social media posts and interview records, to assess indicators such as emotional tone, psychological resilience, optimism or psychological flexibility. These continuous indicators are similar to ecological momentary

assessment, but can be applied across large populations and can capture a wider range of variables with higher temporal accuracy (de Vries *et al.*, 2021). Such methods still require refinement and replication, but they offer unique possibilities for identifying short-term fluctuations in emotions, cognition and behavior that are undetectable by traditional surveys. For instance, subtle changes in narrative patterns may predict the emergence of depressive symptoms earlier than clinical diagnoses, thereby creating conditions for timely or preventive intervention (Eichstaedt *et al.*, 2018; Shin *et al.*, 2024).

This shift from periodic self-report to continuous, AI-enabled sensing can complement psychological assessment by enabling more context-sensitive and timely indicators. In such applications, AI can support data processing and initial screening by flagging potential signals of risk or change from behavioral datasets. However, the interpretation of these signals and final decisions—especially in clinical or high-stakes contexts—should remain a human responsibility. This "human-in-the-loop" approach supports accountability and helps navigate complex value judgments (Ke *et al.*, 2025; Wu & Peng, 2025). Furthermore, the trustworthiness of these systems depends on their transparency and calibrated presentation of uncertainty; when AI assessments lack specificity, false positives can undermine clinical trust, underscoring the need for clear escalation paths to human experts (Afroogh *et al.*, 2024; Ayers *et al.*, 2023).

In this way, AI not only helps to understand psychological processes but also assists in designing personalized action plans that meet users' needs and goals, all within a collaborative framework that augments, rather than replaces, human expertise. In the field of psychology, AI increasingly serves both as an analytical instrument and an intervention agent. Its applications range from CBT chatbots to positive psychology exercises and AI-driven social support systems. Empirical studies show that such systems can reduce symptoms of anxiety and depression, alleviate loneliness, and encourage self-reflection among users. For instance, the fully automated conversational agent Woebot was found to significantly decrease depressive and anxiety symptoms in young adults within two weeks (Fitzpatrick *et al.*, 2017). Similarly, digital mental-health platforms using adaptive natural-language interaction can foster user engagement and emotional awareness (Ni & Jia, 2025).

Nevertheless, current AI-based interventions remain shallower than professional therapeutic services, often lacking the capacity for nuanced clinical judgment or deep empathic attunement (Löchner *et al.*, 2025). Emerging work, however, highlights the promise of adaptive AI—systems capable of modifying intervention content and timing based on user characteristics, situational context, and immediate psychological needs

(Shin *et al.*, 2024). Such adaptive approaches mark a shift from standardized, one-size-fits-all interventions toward more personalized and context-sensitive mental-health care.

Narrative identity analysis is a promising approach: By analyzing recurring themes (such as agency or redemption) in personal stories, these elements are used as resources for fostering resilience and promoting growth, especially during stressful adolescence (Adler *et al.*, 2016; Chen & Bornstein, 2024). With the help of LLMs, personalized prompts can be sent through chatbots, mobile applications or text messages to encourage users to build meaning and stay optimistic, rather than merely focusing on deficits or symptoms. Similarly, affective computing technology can identify emotional cues from open-ended conversations, enabling the system to generate empathetic responses and thereby maintaining user engagement (Ayers *et al.*, 2023; Rashkin *et al.*, 2019; Zhou *et al.*, 2020; Sorin *et al.*, 2024). Among these different methods, the common goal is to enhance personal resources and promote healthy development, rather than merely treating mental illnesses. At the health-system level, the appeal of these tools lies in scalability and access, particularly where mental-health services face workforce shortages. However, their use in clinical or high-stakes contexts depends on clear human oversight and escalation pathways, consistent with risk-based guidance such as the World Health Organization (World Health, 2024).

### **AI's role in learning and teaching**

AI is playing an increasingly significant role in transforming education, particularly by enhancing both learning outcomes and the overall student experience (Wang *et al.*, 2024; Zhai *et al.*, 2021). One of the key areas of AI application in education is the use of intelligent tutoring systems (ITS) that adapt to students' cognitive needs and provide personalized learning experiences. Recent developments in AI-driven educational tools have shown that they can improve students' academic performance while also reducing anxiety and enhancing psychological resilience (Onyebuchi *et al.*, 2024; Zhai *et al.*, 2021). These systems are not just designed to optimize academic achievement but are also tailored to address emotional and social wellness, ensuring that students feel supported and motivated throughout their educational journey.

AI's impact on education is especially evident through the integration of AI with motivational frameworks and stress-reduction strategies. By embedding growth-mindset feedback and cognitive adaptability into learning platforms, AI systems can promote a sense of self-efficacy and reduce the emotional strain often associated with academic performance (Tang & Liao, 2025; Zhang & Liu, 2025). For instance, empirical studies demonstrate that AI tutors can improve academic grades by up

to 15 percentile points through personalized retrieval practice and progress modeling (Baillifard *et al.*, 2025), and a ChatGPT-based rapport-building protocol can significantly enhance L2 grit among English learners, demonstrating its potential to foster emotional support and learning motivation (Ghafouri, 2024).

Moreover, AI can play a critical role in increasing educational equity (Roshanaei *et al.*, 2023). Traditional classroom dynamics can sometimes inadvertently favor students from more privileged backgrounds, leaving others at a disadvantage. However, AI tools can expand access to high-quality education by providing personalized resources that address individual needs and learning paces (Maghsudi *et al.*, 2021; Onyebuchi *et al.*, 2024). This personalized support can reduce barriers, particularly for students who might struggle in a traditional classroom environment.

Despite these advantages, the integration of AI in education also presents challenges, particularly when it comes to cultural sensitivity. AI-based systems are often trained on data that may reflect mainstream cultural values, potentially overlooking the diverse cultural backgrounds of students (Tao *et al.*, 2024). It is crucial to design AI tools that are culturally adaptive, ensuring they resonate with the unique identities and needs of all learners. AI applications must incorporate localized feedback and context-sensitive learning to avoid reinforcing stereotypes or marginalizing minority groups.

In conclusion, AI's role in education is multifaceted, impacting not only academic achievement but also the psychological and emotional wellness of students. By offering personalized learning experiences and integrating cultural sensitivity, AI has the potential to create a more inclusive and supportive educational environment for all learners, while addressing both academic and emotional needs simultaneously. However, the extent of these benefits may depend on culturally responsive implementation, and equity outcomes should be evaluated rather than assumed (Delello *et al.*, 2025; Dekker *et al.*, 2020).

### **AI's role in career and employment**

AI has begun to reshape the workplace, impacting both the structure of organizations and the roles individuals occupy within them (Wu & Peng, 2025). In knowledge work, AI-powered tools are enhancing productivity. Studies show that AI tools like generative assistants can boost productivity by streamlining repetitive tasks and enabling employees to focus more on high-value work (Al Naqbi *et al.*, 2024; Gao & Feng, 2023). This is supported by direct evidence from Noy and Zhang (2023), whose workplace experiments found that using ChatGPT for writing tasks reduced completion time by 40% and improved output quality by 18%.

However, the integration of AI into management systems introduces complex psychological challenges. Studies on human-robot trust highlight a critical distinction: Tang *et al.* (2025) found that emotional trust in humanoid robots boosts employees' willingness to contribute by enhancing perceptions of organizational warmth, whereas functional trust does so by elevating perceptions of organizational capability. This suggests that the nature of human-AI relationships is multifaceted and psychologically nuanced. Furthermore, algorithmic management can encroach on human autonomy, a concern underscored by findings that employees exhibit lower adherence to moral advice from AI supervisors compared to human supervisors, although this can be mitigated by making the AI more anthropomorphic (Xu *et al.*, 2025).

Moreover, as AI begins to take a more controlling role in the workplace, ethical considerations about transparency and fairness are coming to the forefront. Research indicates that employees are more likely to trust AI systems when they are paired with human oversight, especially when these systems can be contested or explained clearly (Noy & Zhang, 2023). The balance between AI's ability to assist and its potential to control is a key point of concern in ensuring that AI adoption does not diminish human agency in the workplace.

AI's influence on career development also highlights broader societal concerns. As AI contributes to workplace automation, questions arise about job displacement and skills development. Here, AI's role in talent management is exemplified by Yang *et al.* (2023), who showed that personalization-aware LLMs for recommendation (PALR) can significantly improve job-performance predictions and role matching. While generative tools can elevate performance, the challenge lies in ensuring equitable and fair practices (Brynjolfsson *et al.*, 2025). In this context, AI should be designed to support, not replace, human roles. This aligns with the forward-looking perspective of Song and Lin (2025), who argue that we are not witnessing a simple replacement of humanity but its ongoing transformation into a "hybrid self," where humans and algorithms never stand alone.

### **AI Ethics in social justice and relationships**

AI holds significant potential to reshape social justice and interpersonal relationships, acting as both a force for equity and a potential amplifier of existing disparities. A paramount concern in the social realm is its impact on trust—a cornerstone of human relationships. Research into human-robot interaction has delineated two distinct types of trust: Affective trust, which enhances perceptions of organizational warmth, and functional trust, which bolsters perceptions of organizational capability,

both critically influencing employees' willingness to contribute (Tang *et al.*, 2025). This nuanced understanding of trust is essential as AI systems are integrated into high-stakes decision-making in healthcare, education, and employment, where they can either fortify or systematically erode trust, particularly among vulnerable populations.

While AI systems can improve outcomes by offering personalized recommendations, this integration carries the inherent risk of reinforcing and scaling societal biases. For instance, LLMs have been found to closely align with the patterns of WEIRD (Western, Educated, Industrialized, Rich, and Democratic) contexts, and in some evaluations, performance appears less consistent for non-WEIRD populations, thereby encoding a significant cultural bias into their outputs (Mihalcea *et al.*, 2025). These biases frequently lead to inequitable outcomes, such as reduced AI efficacy for minority groups. Compounding this, the emotional intelligence of AI is not uniformly distributed; while some advanced models like GPT-4 have been reported to score higher than many human participants on emotion-understanding measures in some benchmark tasks, their underlying mechanisms are non-human and influenced by model design, which may contribute to misjudgments across diverse cultural and demographic groups (Wang *et al.*, 2023).

The problem of algorithmic bias is particularly acute in sensitive domains like hiring, criminal justice, and loan approvals. Some evaluations suggest that model outputs can yield elevated scores on dark personality trait measures, and may reflect and perpetuate social biases present in training data, suggesting that targeted fine-tuning may improve their psychological safety profile (Li *et al.*, 2022). This perpetuation of bias underscores the urgent need for a transparent development framework infused with cultural sensitivity. Without it, AI systems may risk becoming instruments of "ethical imperialism," imposing a predominantly Western framework of values onto global populations (Song & Lin, 2025).

As AI deployment accelerates, the goal must expand from merely eliminating bias to actively promoting equity. This requires context-sensitive designs that account for local norms, historical injustices, and the lived experiences of marginalized communities. This endeavor aligns with the perspective of AI as an extension of human capabilities, where the focus shifts to creating collaborative partnerships that serve human flourishing, a transition that demands robust, interdisciplinary collaboration (Clark, 2003; Zhao & Sun, 2025). Psychology is pivotal in this process. As Wu and Peng (2025) contend, a core mission of AI psychology is to study the value biases and behavioral characteristics of

AI, which is fundamental to ensuring its reasonable use and the good governance of a human-machine symbiotic society. This ensures AI respects human dignity and fosters meaningful social connections by adapting to the pluralistic needs of diverse communities, rather than merely reflecting a dominant cultural perspective.

These equity and relationship concerns are inseparable from questions of trust calibration, bias control, privacy protection, and cultural alignment.

## CONCLUSION AND FUTURE DIRECTIONS

Generalized psychology, as framed here, provides a disciplined way to study AI-era wellness without reifying machines as moral persons. By centering socio-technical arrangements and by treating ACE as measurable outcomes, it connects psychological theory to concrete design and evaluation choices in human-AI collaboration.

Future work should prioritize (a) valid measurement of ACE outcomes across cultures and contexts (*e.g.*, authenticity discount and authorship-related valuation in aesthetic judgments), (b) longitudinal designs that capture adaptation, dependency, and displacement effects (including possible population-level shifts in diversity of creative outputs), and (c) governance-aware research that aligns empirical claims with transparency, bias appraisal, and privacy constraints (including dosage-sensitive evaluation of AI support and escalation pathways in high-stakes settings). A forward-looking agenda therefore requires joint progress in theory, methods, and standards, so that AI-enabled systems can enhance human wellness at scale.

## DECLARATION

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### Author contributions

Jia SY: Writing—Original draft; Ren YM: Writing—Original draft; Wu ST: Conceptualization, Writing—Reviewing and Editing; Peng KP: Conceptualization, Writing—Reviewing and Editing. All authors have read and approved the final version of the manuscript.

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Peng K is the Editor-in-Chief of the journal. The article was subject to the journal's standard procedures, with peer review handled independently of the editor and the affiliated research groups.

## Use of large language models, AI and machine learning tools

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Not applicable.

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