

Bridging Cultures and Brains: An Ethnography-Guided Framework for Experimental Anthropology

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Received: June 27, 2026

Accepted: August 14, 2026

Online Published: August 23, 2026

doi:10.11114/ijce.v9i2.9009

URL: <https://doi.org/10.11114/ijce.v9i2.9009>

Abstract

This systematic narrative review bridges cultural anthropology and cognitive psychology, proposing experimental anthropology as an interdisciplinary framework to address the longstanding divide between these two fields. Experimental anthropology, which focuses on the interplay among culture, experience, and neural mechanisms, has experienced significant growth in recent years. Although anthropology and psychology have historically diverged in their views on human nature and research paradigms, both disciplines acknowledge the central role of culture, leading to extensive interdisciplinary exploration. This paper systematically examines the ontological, epistemological, and methodological tensions between the two disciplines and constructs a four-dimensional integrative framework for experimental anthropology, guided by ethnography and centered on predictive coding, cultural neurophenomenology, and front-loaded concepts. This framework builds upon previous studies by incorporating intertemporal historical evaluation into analytical procedures. Laughlin and Throop (2006) laid the groundwork for cultural neurophenomenology, and this study enhances their framework with a comprehensive multi-dimensional methodological approach. Roepstorff and Frith (2012) presented an initial concept for experimental anthropology, which we enhance by introducing formal cross-cultural and historical assessment components. Building on the ethno-experimental practical workflow established in cross-cultural behavioral research (Henrich et al., 2005), our approach enhances this framework by incorporating phenomenological observations, neural findings, and an examination of historical context. The proposed framework helps to reduce single-paradigm bias and conduct experimental anthropological research in a multicultural context.

Keywords: experimental anthropology, culture, ontology, epistemology methodology

1. Introduction

The early concepts and practices of experimental anthropology were integrated into general anthropology and had not yet developed into a distinct disciplinary framework. During their fieldwork, anthropologists began to employ experimental methods to test hypotheses and elucidate cultural phenomena. As anthropological research deepened and methodologies diversified, experimental anthropology gradually emerged as an independent field of study. This discipline incorporates theories and methods from psychology, sociology, biology, and other areas to establish a unique research paradigm. Interdisciplinary collaboration has been pivotal in the academic evolution of experimental anthropology. Anthropologists collaborate closely with psychologists, sociologists, biologists, and other scholars to design experiments, analyze data, and interpret results, which has significantly accelerated the field's development. Throughout the progression of experimental anthropology, numerous important theories and research findings have emerged. These contributions not only enhance the overall knowledge system of anthropology but also offer new perspectives and methodologies for research in other disciplines. Currently, experimental anthropology is experiencing rapid growth. As globalization and informatization advance, the cultural and social challenges confronting humanity have become increasingly complex and diverse. Experimental anthropology will continue to harness the benefits of interdisciplinary collaboration and apply advanced research methods to provide robust academic support for addressing these urgent issues.

Anthropologists and psychologists have long debated the relative significance of innate versus acquired factors in human development. For over a century, anthropologists have underscored the influence of socialization and learning on thought patterns, as well as the importance of social organization and action (Kroeber & Kluckhohn, 1952). In contrast,

psychologists have largely neglected the role of culture in shaping human thought processes and functions, focusing instead on advancing their discipline through scientific methods. Additionally, their heavy reliance on laboratory experiments often leads psychologists to overlook how psychological processes manifest in everyday social interactions. Since its establishment as an independent discipline, anthropology has cultivated two primary research orientations: ontological inquiry into the nature of human reality and epistemological inquiry into the acquisition of knowledge. This division has resulted in a persistent fault line within the field (Roepstorff & Frith, 2012). Psychology and anthropology exhibit distinct ontological, epistemological, and methodological orientations, as outlined in Table 1. Although both disciplines focus on the study of humans, they remain divided on numerous fundamental practical issues. As early as the previous century, scholars identified mind-body dualism as the primary conceptual barrier between the two fields (Bunge, 1980). This divide not only impedes theoretical advancement in both disciplines (Throop, 2002) but also generates various practical challenges, including approaches to child education, the understanding of mental illness, and the construction of social reality and morality.

Table 1. Different orientations between psychology and anthropology

	Psychology: Emphasis on biological properties	Anthropology: emphasis on cultural attributes
Ontology: The Nature of Human Reality	Brain	Experience
Epistemology: How to acquire knowledge.	Computational view: pay attention to information processing	Cultural view: pay attention to the generation of meaning
Methodology: on how to study	Scientism/positivism: a logical-inductive research method	Humanism/Existentialism: A Research Method of Understanding-Interpretation.

The ongoing debate between philosophers and scientists regarding the mind-body problem, as well as the types of explanations required to bridge this conceptual divide, has enabled researchers to examine the issue more thoroughly. Over the past century, the physicalist solution to the mind-body problem has garnered significant recognition (Chambliss, 2018). This development prompts a fundamental question: Is it possible for anthropologists and psychologists to embrace an interdisciplinary approach to formulate a cultural perspective that reconciles mind-body dualism?

Experimental anthropology, a subfield of psychological anthropology, employs psychological experimental methods in anthropological research, with neuroanthropology representing a branch of this discipline. Scholars have suggested that phenomenological research effectively complements the exploration of the mind-body division (Shanon, 2008), leading to the emergence of cultural neurophenomenology. At the beginning of the 21st century, neuroscientists began utilizing functional MRI to investigate cultural phenomena, resulting in increased academic interest in cultural neuroscience. This field has developed two primary lines of inquiry: one framework explores the universal mechanisms that underlie the formation of cultural groups and collective habits, while the other investigates trait differences among cultural groups. However, both frameworks tend to reduce culture to fixed traits or group-specific particularities. This limitation likely arises from the fact that most existing research implicitly incorporates specific cultural concepts, rarely treating culture as a central construct for investigation (Mateo et al., 2012). This paper focuses on experimental anthropology precisely because this field emphasizes the interpretation of culture. It not only considers culture as a potential variable but also explicitly examines it as a core variable. This approach may effectively bridge divides between disciplines.

Anthropologists are increasingly adopting psychological perspectives to explore various psychological issues across diverse cultural contexts, while the psychological community is becoming more aware of how social and cultural factors influence human psychological activities. Consequently, a global research landscape has emerged, wherein anthropologists and psychologists investigate the same field from distinct perspectives, despite differences in their methods and core concepts. In an era marked by rapid advancements in modern neuroscience, it is increasingly inadequate to address human-related issues without integrating insights from neuroscience and engaging with neuropsychology. Likewise, rigorous psychological experiments are essential for understanding human brain structure and cognitive processes. However, it is equally critical for anthropologists to acknowledge the cultural influences on these structures and processes, necessitating the use of ethnological methods to describe specific cultural contexts. In this context, experimental anthropology has emerged as a promising bridging paradigm. Nevertheless, existing studies exhibit fragmented theoretical construction and lack a systematic, operable integrated framework.

2. The Ontology of Experimental Anthropology

This experimental approach aims to reveal the fundamental psychological mechanisms underlying human behavior, while anthropology focuses on human lived experience and employs historical and cultural perspectives to elucidate the dynamics of human development. Humans exist at the confluence of nature and culture. The ongoing exploration of the relationship between these two domains and the pursuit of a balance that adapts to contemporary society has long been a central theme in academic discourse. Currently, scientific understandings of human identity are undergoing significant

transformations. For experimental anthropology to effectively bridge psychology and anthropology, it must concurrently address the two core ontological dimensions of human existence: the brain and subjective experience. In particular cultural contexts, a dynamic interaction mechanism exists between the human brain and lived experience. Unlike traditional psychological experiments that often depend on standardized instruction-following and button-pressing paradigms, experiments conducted within the framework of experimental anthropology are situated in authentic cultural environments, enabling participants to engage in tasks informed by their actual lived experiences. This methodological approach inherently introduces greater complexity into research design (Roepstorff & Frith, 2004).

In the early 20th century, Edmund Husserl, the founder of the modern phenomenological school, contended that due to the unique ontological characteristics of human beings, the study of human nature should not mimic the mechanistic research models of natural science. Instead, it should cultivate a scientific approach that aligns with the distinctive attributes of human existence (Che, 2003). Building on this perspective, some researchers have suggested that cultural neurophenomenology, as an extension of experimental anthropology, can act as a conceptual bridge between anthropological and psychological research. This framework is defined as "theories addressing both the experiential and neurobiological dimensions of cultural activities," aiming to develop "neural theories of culture and cultural theories of the brain." Cultural neurophenomenology enables researchers to systematically investigate the social and biological factors that shape, enhance, and constrain human lived experience (Laughlin & Throop, 2006). By employing linguistic frameworks that integrate both psychological and physiological dimensions of culture, this approach allows for a comprehensive understanding of individual experience, cultural contexts, and external reality. It further posits that "information" serves as the core unifying concept linking these disparate disciplinary discourses (Roepstorff & Frith, 2012). In this framework, culture is not merely a contextual backdrop but a fundamental component of predictive processing models, as illustrated by the concept of "contextualized prediction" (Clark & Lupyan, 2020).

A historical divide has emerged between two academic camps: one asserts the universality of cognition and claims that culture exerts minimal influence, while the other emphasizes cultural differences and seeks to categorize populations into distinct groups based on cultural boundaries (Henrich & Muthukrishna, 2021). Many scholars have adopted unidirectional causal ontologies, proposing a singular linear path of influence—whether from biology to experience, experience to biology, or culture to all other domains. Such perspectives offer an oversimplified account of the ontology of human reality. We advocate for a more integrated ontological framework, positing that humans are embodied beings with brains and subjective experiences, all situated within specific cultural contexts. Furthermore, brains, experiences, and cultures engage in dynamic, reciprocal interactions. These interconnected elements form the core research ontologies for interdisciplinary integrated research and can also be utilized to address practical issues such as human learning and cognitive processes.

The concept of the self is intricately linked to culture, and a prominent area of inquiry in cultural neuroscience examines the "self" across various cultural groups, such as the comparison of self-construal between Eastern and Western populations (Yang et al., 2019). This research indicates that cultural contexts may elicit divergent neural responses during self-relevant processing, suggesting that the neural underpinnings of the self can be modified by cultural and environmental factors. Consequently, this finding challenges the principle of cognitive universalism.

E. O. Wilson proposed the controversial "gene-cultural co-evolution theory." Despite ongoing debates regarding this framework, the bidirectional interactive process of "spirit-culture and culture-gene" resonates with the notion of the cultural self, as introduced by Wilson (Wilson, 2008). Examining the "self" embedded within culture allows researchers to investigate abstract concepts through concrete empirical methods (Roepstorff, 2011). For example, a well-validated paradigm that links specific cognitive tasks to the attribution of trait adjectives offers significant research potential. In this experimental design, after a concept is predefined, researchers analyze verbal reports collected during task execution and explore the meanings constructed throughout the research process. The primary challenge for psychologists is twofold: to elucidate how cultural context and individual lived experiences shape specific self-related mental activities, and to determine the extent to which these cognitive-neural patterns are shared among members of a particular cultural group (Wang & Zhu, 2022). Notably, research in cultural neuroscience indicates that the brain and culture together form a recursive regulatory system. Collectivist cultures promote the development of the temporoparietal junction by reinforcing social predictive needs; conversely, damage to this brain region diminishes cultural adaptability (Slors & Bennett, 2022).

3. The Epistemology of Experimental Anthropology

When individuals from diverse cultural backgrounds are queried about their criteria for determining truth, their responses typically categorize into two distinct groups. On one hand, they may accept a claim as true based on personal experience or the experiences of acquaintances. On the other hand, their assessment of truth is influenced by the worldview shaped by their upbringing and education. Consequently, whether knowledge is acquired directly or indirectly, a scientific method is essential for validating its accuracy. It is widely recognized that scientific inquiry should focus on five fundamental

characteristics: first, science aims to understand the world through observation; second, it evaluates the reliability of these observations; third, it develops general models to elucidate the observations; fourth, it tests these models against new observations; and finally, it compares various models to determine which one best aligns with the observed data. In this context, science can be defined as a systematic approach to exploring the world.

According to Husserl, the development of a fully mature science necessitates a thorough internal investigation of the content and structure of consciousness, alongside an examination of the external historical culture that underpins our subjectivity. In essence, historical-cultural reflection is synonymous with self-reflection, and vice versa (Li, 2000). Cultural approaches in anthropology frequently prioritize external inquiry, focusing on historical and cultural processes, yet they often lack systematic phenomenological investigations into the structures of consciousness (Laughlin & Throop, 2006). Both the phenomenology championed by Husserl and the historical-cultural perspective advocated by Bourdieu and others are essential for clarifying the fundamental structure of human consciousness. The culturistic approach in anthropology has significantly contributed to the advancement of both anthropology and psychology. It has demonstrated that a crucial aspect of any rigorous scientific inquiry involves not only conducting historical analyses within one's own culture but also understanding research subjects within a cross-cultural framework (D'Andrade, 1995).

Cognitive psychologists assert that brain data can address this issue; however, achieving this objective remains notably challenging in practice. In contrast to anthropology, which elucidates how humans comprehend the world through meaning-making, brain-based research facilitates more straightforward data collection and clearer interpretation of results. Nonetheless, some scholars caution that overinterpretation of brain data may result in statistical and logical pitfalls (Poldrack & Yarkoni, 2022). Consequently, it is essential to gather data through well-designed, rigorously controlled experiments that incorporate culture, experience, and behavior into the research framework, highlighting the particular value of complementary anthropological insights. Human understanding of the world functions on multiple levels, presenting a core challenge for this line of research: the collection of data that encompasses these diverse levels. Every research discipline encounters a gap between ideal objectives and practical execution, specifically a discrepancy between optimal methodological standards and the realities of research conditions. This gap emerges from various limitations, including constraints on variable control, technological bottlenecks, and deficiencies in experimental design, among others. In the context of the digital age, experimental research, characterized by its complexity, has redefined the theory of social materiality. It investigates how technologies, such as social media and algorithms, co-influence cognition, interaction, and social organization in conjunction with cultural practices (Leonardi, 2021).

Integrating the significance of life experience into scientific discourse and establishing a conceptual framework for the agency and interaction between the world's structure and brain structures presents a formidable challenge. The most effective strategy involves centering this interaction process within experimental design, developing specific and feasible experiments, and addressing these issues through targeted methodologies, particularly those derived from anthropology. However, anthropology places considerable demands on researchers, and few practitioners can implement its methods effectively. As a result, anthropological perspectives are seldom integrated into experimental design and data analysis. When an experiment encompasses too many variables, its structural complexity and implementation difficulties increase correspondingly. Although this complexity aligns with the primary objectives pursued by anthropologists, it may also create a disconnect from the realities of lived experience, resulting in a problematic outcome: it may compel researchers to forfeit the core strengths of anthropology while simultaneously failing to provide a methodologically rigorous research process.

Meaningful components of human life encompass customs, currency, religion, language, recreational activities, laws, power structures, and artistic genres, among other elements (Chiao & Immordino-Yang, 2023). The construction of personal meaning is indeed shaped by individual experiences and social interactions. Psychologist Jerome Bruner has long advocated for the emphasis on "meaning-making" within anthropology. He proposed that while the computational perspective focuses on information processing, the cultural perspective emphasizes the generation of meaning. Bruner contends that the rules governing information systems cannot be extended to encompass the meaning-generating system, which is inherently disorganized, ambiguous, and deeply reliant on specific cultural contexts. In this regard, the cultural perspective provides significantly greater explanatory power, a dimension that computational approaches cannot easily replicate. The "information" prioritized by the computational perspective pertains to objectively existing, processable data, whereas the cultural perspective highlights the subjective dimension underlying information—that is, the irreplaceable "meaning" conveyed by information (Bruner, 2012). This framework established the theoretical foundation for experimental anthropology.

Most cognitive activity arises from the generation of lived experience. Modifying the structure of experience, as mediated by the nervous system, inherently alters the "meaning" individuals derive from that experience. Culture is now perceived not as a latent variable, but rather as a "toolkit" and a "resource library" (Swidler, 1986). This conceptual transformation also establishes a crucial foundation for the interdisciplinary advancement of experimental anthropology. Experimental

anthropology can be characterized as a unique form of human practice; it employs anthropological tools and techniques to interpret experiments, serves as contextual annotation for experimental research, and regards experiments themselves as a distinct type of cultural ritual. Building on the cultural toolkit theory, researchers have introduced a "dual process model," which differentiates the roles of intuitive cultural schemas and reflective cultural discourse in shaping action, thereby providing a structured framework for experimental design that disentangles the multi-level effects of culture (Vaisey & Lizardo, 2020).

4. Methodology of Experimental Anthropology

Experimental anthropology must move beyond traditional laboratory paradigms and embrace mobile neurotechnology and community-led research models (Redcay & Wang, 2023). This emerging field faces joint scrutiny from anthropology and psychology. Anthropologists have raised a fundamental critique, asserting that experimental methods are inherently unsuitable for non-Western cultures. They contend that behaviors obtained through conventional experimental approaches cannot accurately represent normal cognitive function in these populations. To address this concern, researchers must carefully consider data collection practices, which differ significantly from behavioral experimental research conducted on non-human animals. Additionally, it is essential to minimize and quantify the distortion introduced by observational interventions in the natural local environment. Psychologists have also expressed distinct concerns regarding inherent flaws in traditional experimental designs.

To address these interdisciplinary concerns, it is crucial to prioritize various experimental strategies that aim to replicate consistent outcome patterns to the greatest extent possible. Grounded in cross-cultural experimental research, Henrich et al. (2005) underscore the risks associated with decontextualized laboratory paradigms and stress that ethnographic understanding should inform experimental design, ensuring that protocols are interpreted within local cultural contexts. Building on these methodological insights, subsequent scholars have proposed a three-step workflow for culturally situated field experiments: first, conduct long-term ethnographic fieldwork to thoroughly document the daily practices of the target community; second, create culturally calibrated tasks that extend beyond decontextualized abstract experimental games; and finally, implement mixed methods that combine behavioral measurements with qualitative interviews to identify potential biases stemming from cultural misalignment (Henrich et al., 2005).

The objective of experimental anthropology is to establish a research framework that adheres to the fundamental methodological requirements of all pertinent disciplines within this field. Anthropologists assert that cognition must be examined inextricably linked to its cultural context. The investigation of cognition entails analyzing cognitive behavior within specific contexts and understanding how such behavior relates to various cultural dimensions. Researchers should refrain from imposing their own perspectives and experiential categories onto the phenomena being studied; rather, they must align their research methodologies with the subjects of investigation. By examining the interrelations among culture, experience, and the nervous system at a theoretical level, and by testing these relationships in concrete settings through both fieldwork and laboratory research, experimental anthropology seeks to establish a more robust foundation for exploring underlying mechanisms. Against the backdrop of rapid advances in neuroscience, neuroanthropology and cultural neuroscience have emerged. These fields offer a methodological and conceptual synthesis that bridges existing divides in anthropology, and may open new avenues for the conceptualization and practice of "experimental anthropology", with a focus on the dynamic mechanisms linking culture, neural processes, and behavior (Kim & Sasaki, 2023). The proposal to integrate the two psychological paradigms of subjectivity and objectivity reflects the inherent logic of psychological development, and marks the inevitable future direction for research on human psychology. It plays a critical role in shaping how people understand agency, subjectivity, and communication.

A defining characteristic of experimental anthropology is its emphasis on the empirical field and the factual context produced during experiments (Kroeber & Kluckhohn, 1952). This integrated research approach is structured around four core domains: internal phenomenology, external historical research, cross-cultural research, and neuroscience research. This multi-domain framework was designed to mitigate cognitive biases that arise during the research process—biases that are inherent in single-disciplinary research designs. Consequently, both intersubjective and cross-cultural evaluations are essential. A rigorous multi-level assessment diminishes bias in truth analysis and includes four types of evaluation: intra-subject evaluation (related to phenomenological studies), inter-subject evaluation (the cornerstone of the scientific method), cross-cultural evaluation (linked to anthropological studies), and transtemporal evaluation (associated with historical studies). Furthermore, researchers produce new empirical findings about the target subject to facilitate comparative analysis, through which they assess meaning frameworks (Laughlin & Throop, 2001). Deriving meaning from research outcomes represents the "correct interpretation" that all scientific inquiry seeks to achieve; this interpretation aims to align as closely as possible with the perspectives acknowledged within the research's scope.

4.1 The Four-Dimensional Integrative Framework

This framework diminishes bias in truth analysis through four interlocking layers of evaluation: Phenomenology for intra-subject assessment, capturing first-person subjective experience and meaning-making; the Scientific method for inter-subject assessment, ensuring replicability and objectivity via controlled experimental design; Anthropology for cross-cultural assessment, contextualizing findings within cultural meaning systems and testing generalizability across groups; and Historical research for intertemporal assessment, tracing the evolution of cognitive and cultural patterns over time. These dimensions mutually support and confirm each other, collectively constituting a multi-level research system for experimental anthropology. The logical arrangement of the framework is depicted in Figure 1.

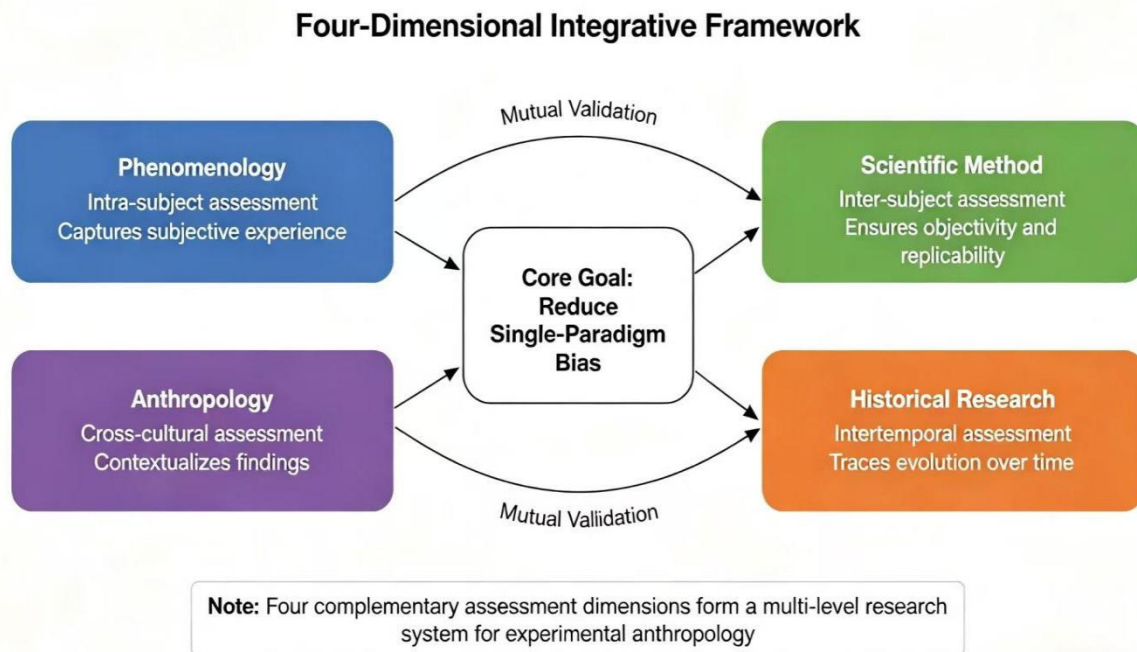


Figure 1 A four-dimensional integrative methodological framework of experimental anthropology

Experimental anthropology centers on framing "front-loading concepts" as predictive coding, rooted in phenomenology. Phenomenological research findings can inform empirical research design, integrating concepts developed through such inquiry into the experimental framework. This approach serves to unify phenomenology, neuroscience, and anthropology by using concepts as a conduit across various research levels. The fundamental research premise posits that individuals actively comprehend and shape their lived experiences. Preconcepts, serving as predictive codes in experimental research, operate effectively at both neural and cultural strata, facilitating interdisciplinary connections. In cognitive neuroscience, predictive coding concepts have been extensively utilized in studying basic and intricate cognitive processes.

4.2 Supporting Theoretical Foundations

The optimally interacting minds model, initially proposed by Bahrami et al. (2010), elucidates how pairs of human participants can enhance joint decision-making performance by effectively weighting each other's confidence during collaborative perceptual tasks. Subsequent cross-cultural extensions of this framework revealed a universal equality bias in collective decision-making across diverse societal contexts (Mahmoodi et al., 2015). Although this body of work primarily examines controlled laboratory collaborations, variational theories of culture further explicate how large-scale cultural practices can align shared expectations and diminish individual predictive error (Veissière et al., 2020).

Clark (2020) proposed a "situated prediction" framework, highlighting that prediction relies not only on internal models but also on the dynamic integration of the external cultural environment, including social norms and ritual practices. This study advocates for the incorporation of cultural variables in experimental design to mitigate "uncultured" bias and to establish an empirical foundation for neuro-cultural interfaces in experimental anthropology (Clark & Lupyan, 2020). The aforementioned research demonstrates that predictive coding resonates with anthropological inquiry, underscoring the concept of "cultural environment as a predictive model" (Clark, 2023). Regarding data collection, Roepstorff (2021) suggested that "cultural script reporting" should supplant the traditional "stimulus-response" paradigm by capturing

implicit cultural models through text reports, thereby verifying how these models influence neural prediction processes. A fundamental mechanism of experimental anthropology involves the sharing and iterative adjustment of interpretive models: the holistic cultural framework informs the interpretation of individual experiences and behavioral data, while empirical findings at the individual level, in turn, revise and refine the overarching cultural interpretation. This bidirectional interaction is facilitated through the exchange of both implicit and explicit cognitive frameworks (Roepstorff et al., 2021), which forms the epistemological foundation for integrating anthropological interpretation with experimental data.

Experimental anthropology integrates the impact of rituals on groups into empirical investigations, recognizing that rituals are prevalent in everyday life. For instance, researchers may incorporate standard psychophysiological tasks within a communicative and collaborative context, allowing participants to engage in discussions when they hold differing opinions regarding the solution to a shared task and to freely exchange individual observations (Bahrami et al., 2010). During rituals, the experiences of both performers and audiences become interrelated, leading to synchronized brain activity and heightened arousal. This interconnectedness influences the mechanisms through which critical factors enhance team cohesion (Xygalatas, 2008). Rather than reducing a specific ritual to mere physiological measurements, this approach posits that utilizing the fundamental anthropological concept of the group-level effects of rituals as a basis for predictive coding design can facilitate highly focused experimental research. Field experimental work by Xygalatas et al. (2013) demonstrated a correlation between participation in high-ordeal collective rituals and increased prosocial behavior. Participants who endured greater subjective pain during the ritual made higher anonymous donations, a phenomenon observed among both ritual performers and observers.

This methodology aims to integrate four dimensions: phenomenology (intra-subject assessment), the scientific method (inter-subject assessment), anthropology (cross-cultural assessment), and historical research (intertemporal assessment), thereby mitigating biases inherent in single-dimension research. Through this multidimensional integration, experimental anthropology can more accurately elucidate the interrelationships among culture, individual experience, and the nervous system within specific contexts, thereby establishing a robust foundation for the exploration of underlying research mechanisms.

5. Discussion

Recent years have seen significant advancements in both the theoretical development of predictive coding in cultural research and the utilization of mobile neural technology in this domain (Redcay & Wang, 2023). Despite encountering numerous unresolved challenges in the application of neurotechnology to real-world settings, innovative approaches like portable fNIRS devices are starting to overcome the constraints of conventional laboratory-centered investigations. Rather than being restricted to cultural description, experimental anthropology should progress towards establishing cultural neural intervention initiatives to investigate actively the influence of culture on cognitive functions (Chiao & Immordino-Yang, 2023).

Human beings exist within a repository of culture, where numerous established knowledge systems are rooted in authentic experiences, yet these systems also distort how individuals interpret their lived realities. Consequently, the true adaptive capacity of culture is ultimately reflected in the individual experiences of its members. This indicates that psychology functions as both an empirical and a social process. Over the course of psychology's development, its intellectual scope has gradually expanded: "On the surface, the most problematic aspect of psychology is that it narrows our scope of understanding..... Yet when accounting for its inherent complexity, psychology broadens our horizons and provides us with a rich understanding of humanistic spirit and self-awareness" (Laughlin & Throop, 2006). This transformative shift is closely tied to the interpretation of cultural meanings, making the integration of cultural interpretation with psychological mechanisms essential for advancing our understanding of human behavior.

From a philosophical standpoint, theories of truth can be categorized into two main types: the correspondence theory of truth and the coherence theory of truth (Laughlin & Throop, 2006). No two societies possess identical knowledge systems or exhibit equal trust in the same domains of information. Each society harbors intrinsic biases that influence how younger generations are educated and how individuals perceive themselves and their surroundings. Cross-cultural variations in beliefs regarding disease exemplify the application of the four-dimensional framework of experimental anthropology. For example, traditional African societies view disease as a manifestation of social and moral disorder, whereas Western societies conceptualize disease as a biological and pathological phenomenon (Horton, 1967). Likewise, the differing public attitudes and behavioral responses during the COVID-19 pandemic illustrate how distinct cultural models shape perceptions of health risks.

The proposed framework comprises four dimensions: the phenomenological dimension, which elucidates individual subjective experiences of illness; the scientific method dimension, which assesses objective physiological and behavioral indicators; the anthropological dimension, which elucidates the cultural meaning system underpinning health beliefs; and

the historical dimension, which traces the evolution of disease concepts over time. Experimental anthropology and allied fields have endeavored to establish a more robust collaborative framework for anthropology and psychology, yielding significant advancements in this domain.

In examining the psychological and behavioral mechanisms of global minorities and marginalized communities, it is essential to comprehend cross-cultural cognitive and explanatory frameworks while integrating psychological data into the research agenda. Two significant methodological challenges persist in the current literature. First, studies employing qualitative methods for historical and cultural interpretation often fail to provide verifiable empirical data. Conversely, experimental psychology studies that emphasize the controllability and repeatability of data frequently become detached from the relevant cultural context. Second, certain research avenues prioritize historical and cultural interpretation yet lack a systematic validation mechanism, while others concentrate on experimental data but do not offer a coherent interpretive framework.

The convergence of cultural psychology and psychological anthropology reveals that culture is not a uniform or unchanging entity but rather a dynamic system of significance constantly evolving through historical processes and everyday activities. It adheres to the universal cognitive principles while embodying the distinct categorization structures and personal perceptions of particular cultural groups. Throughout extended historical progress, culture encompasses both shared traits of the dominant culture and the unique attributes of various ethnic communities. In this context, the experimental anthropology framework could enhance interdisciplinary cooperation and transcend geographical barriers in forthcoming studies(Sequeira et al., 2024).

The essence of this paradigm lies in establishing a two-way dialogue mechanism through "field experiments." Initially, it capitalizes on the strengths of anthropology by inviting anthropological researchers to elucidate abstract concepts and classification systems within specific contexts using ethnographic methods. Subsequently, psychological researchers analyze the experimental content and conceptual frameworks to identify prediction codes suitable for experimental research, which are then integrated as variables into the experimental design. The entire experiment is conducted within a genuine cultural environment, aiming to replicate authentic scenarios as closely as possible, and necessitates active collaboration between psychological and anthropological researchers. The final research outputs encompass not only quantitative psychological experimental data but also supporting explanatory annotations provided by anthropological researchers. This approach has garnered recognition from the international academic community, although it has yet to be fully implemented. In culture-focused research, two predominant trends have emerged: cross-cultural comparison and cultural development research.

Culture is inherently dynamic, particularly in the context of globalization and the rapid advancement of information technology. This accelerating pace of change prompts critical inquiries into how emerging cultural patterns influence psychological development. What psychological mechanisms arise from biculturalism or multiculturalism? How do individuals utilize their cognitive abilities and lived experiences to facilitate cultural evolution? What mechanisms support the reciprocal enhancement of culture and psychology? Additionally, how can humans anticipate future developments while striving to comprehend and transform their surrounding environment? Currently, it is evident that these questions cannot be addressed through a singular research method. Instead, the exploration of integrated research methodologies is crucial for understanding our pluralistic world. As an interdisciplinary paradigm, experimental anthropology transcends the mere juxtaposition of anthropological interpretation and psychological experimentation. The four-dimensional integrative framework proposed in this paper enhances the existing theoretical system of experimental anthropology by incorporating historical and intertemporal assessment dimensions. Future studies can further test and refine this framework through field experiments conducted in specific cultural contexts, thereby promoting a deeper integration of anthropology and psychology.

Acknowledgments

Not applicable.

Author contributions

Not applicable.

Funding

This work was supported by the Educational General Project 2025 in the "14th Five-Year Plan" of the National Social Science Fund of China (grant number: BAA250046).

Competing interests

Not applicable.

Informed consent

Obtained.

Ethics approval

The Publication Ethics Committee of the Redfame Publishing.

The journal's policies adhere to the Core Practices established by the Committee on Publication Ethics (COPE).

Provenance and peer review

Not commissioned; externally double-blind peer reviewed.

Data availability statement

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

Data sharing statement

No additional data are available.

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