Interconnected consciousness: An exploration of African perspectives on the meanings and functions of consciousness and its applications to artificial intelligence

Name: Jason Hall

Student Number: 1726496

Supervisor: Dr Sahba Besharati

Co-Supervisor: Prof Benjamin Rosman

Course: PSYC7022A

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Declaration

I, Jason Hall, declare that this research project is my own, unaided work. It is submitted for the Master of Arts in Social and Psychological Research degree at the University of the Witwatersrand, Johannesburg. It has not been submitted before for any other degree or examination at this or any other university.

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Lecturer Name	Dr Sahba Besharati

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Abstract

Consciousness remains one of the most complex and debated phenomena in philosophy, neuroscience, and more recently in artificial intelligence (AI). While the majority of consciousness research has been conducted in WEIRD (Western, Educated, Industrialised, Rich, and Democratic) contexts, relatively little is known about how it is conceptualised in non-WEIRD populations. This study aimed to explore African perspectives on the meaning and functions of consciousness, as well as attitudes toward AI consciousness. Using an exploratory survey design, qualitative responses from a diverse sample of African participants (n = 125) were analysed using a six-step thematic analysis method. Findings revealed that participants primarily defined consciousness through awareness (perception, self-recognition), cognition (decision-making, problem-solving), and existential dimensions (e.g., culturally shaped worldviews and first-person experiences often described as transpersonal in nature). Functionally, consciousness was perceived as essential for survival, adaptation, social connection, and meaning-making through creativity and self-reflection. Many participants expressed scepticism about the possibility of AI consciousness, citing its lack of biological embodiment, emotional depth, and cultural integration as key barriers. These perspectives align with predictive coding models of consciousness, but highlight the need for a broader framework that incorporates social, cultural and affective dimensions. The findings suggest that consciousness is not only seen as an individual cognitive process but as an emergent, relational phenomenon shaped by collective human experiences. This study contributes to global consciousness research by integrating African worldviews and offers valuable insights into the socio-cultural factors influencing perceptions of AI. The implications for AI development in African contexts are discussed, particularly regarding the ethical and cultural considerations necessary for AI integration into society.

Keywords: consciousness; artificial intelligence; predictive coding; embodiment; social cognition, African epistemologies.

Table of Contents

Chapter 1: Introduction

Background and rationale

The study of consciousness has seen significant advancements in recent decades as cognitive scientists have worked to construct a more comprehensive and robust scientific understanding of its underpinnings (Dehaene, Lau, & Kouider, 2017). These developments have been highly valuable, as our understanding of the meanings and functions of consciousness have far-reaching consequences for morality, law, philosophy, social justice, meaning-making, and scientific curiosity (Seth & Bayne, 2022). However, there is a notable dearth of theoretical contributions from non-WEIRD (Western, Educated, Industrialised, Rich, Democratic; Henrich, Heine, & Norenzayan, 2010) communities into this discourse, raising two important concerns. First, there is a risk of epistemic exclusion, wherein already marginalised nations remain sidelined and excluded from this critical conversation. Second, consciousness remains an intrinsically elusive phenomenon, and failing to seek diverse perspectives may leave essential dimensions undetected or misinterpreted. If this latter point holds, then previously unheard contributions from African perspectives and their associated epistemologies could not only broaden but also fundamentally challenge and refine dominant global models of consciousness.

Furthermore, artificial intelligence (AI) use is becoming ubiquitous, signalling a crucial moment for us to actively engage in shaping its development (Kelly, Kaye, & Oviedo-Trespalacios, 2023). Collaborative efforts between AI experts and consciousness researchers have begun to elucidate AI's sophisticated capabilities, such as sensory response and narrative construction (LeDoux et al., 2023). Nonetheless, the urgency of this research is particularly pronounced in the southern hemisphere, where despite rapid adoption in developing contexts, AI often lacks alignment with local socio-cultural values (Carman & Rosman, 2023; Mehrabi et al., 2021). Without involvement from global south scholars in AI discourse, we risk missing a critical chance to steer AI research and application towards better serving our communities (Adams, 2021; Benjamin, 2019). Addressing this need, the current study is embedded within a larger interdisciplinary research initiative aimed at redefining the meanings and functions of consciousness, and its application to AI. This aligns with efforts which seeks to integrate and emphasise diverse cultural insights, thereby enriching the

discourse and potentially leading to more universally applicable and culturally sensitive models of consciousness (Matshabane, 2021).

The convergence of the topics of AI and consciousness, studied through a neuroscientific lens, offers an important perspective. Since its formal inception in the 1950s, AI development has largely drawn from the tenets of cognitive psychology and neuroscience, including theories like information processing and neural networks (Dong et al., 2020). Leading neuroscientists suggest refining our theories of consciousness to develop rigorous tests for assessing artificial agents' consciousness (LeDoux et al., 2023). However, these theories predominantly reflect Western individualistic views. Thus, an opportunity is presented to incorporate perspectives from the Global South. Such research could significantly influence policy on AI use, addressing issues like privacy and educational impacts, and potentially shift public perceptions and applications of AI. It may also help ensure that future AI systems are socially equitable, reducing the risk of technological marginalisation across socioeconomic strata.

Research aims and objectives

The primary aim of this study is to explore African perspectives on the meanings and functions of consciousness and how these perspectives inform an understanding of AI consciousness and its possibilities (if any). Additionally, by examining a broad range of demographic variables, the study seeks to identify potential correlations between psychosocial, socio-economic, and cultural factors and lay perceptions of consciousness and AI. The findings from this study should provide a foundation to evaluate how these diverse African perspectives on consciousness can inform future AI research, particularly in understanding AI's potential role and integration into society. Doing so may demonstrate the importance of incorporating diverse cultural and philosophical perspectives in the discourse on consciousness and AI, emphasising the impact on theoretical development and societal integration.

The following literature review begins by situating the study within the broader historical and theoretical landscape of consciousness research, highlighting key developments and limitations in both neuroscience and philosophy. It then introduces predictive coding as a

promising framework, while also emphasising the need to account for social, affective, and culturally diverse understandings of consciousness - particularly those from African perspectives. These theoretical foundations set the stage for the research question and hypotheses. The methods chapter follows by outlining the study's mixed-methods design, detailing the sample, instruments, and procedures used to collect both qualitative and quantitative data. This structure ensures a systematic and multidimensional investigation of how consciousness is conceptualised and how these views may relate to the perceived potential for consciousness in artificial intelligence.

Chapter 2: Literature Review

A brief history of consciousness studies

The question of consciousness - what it is and why it exists - has long been a subject of philosophical contemplation, with figures such as Descartes, Locke, and Kant offering early theoretical perspectives (Seager, 2007). Despite this longstanding interest, systematic scientific exploration of consciousness only began in the late nineteenth century, when early experimental psychologists like Wilhelm Wundt and William James attempted to study conscious experience through introspection and controlled experiments (Benjamin, 2023). However, with the rise of behaviourism in the early 20th century, which rejected introspection in favour of observable and measurable behaviour, consciousness research was largely dismissed as unscientific (Watson, 1913). This neglect persisted for much of the early-to-mid 20th century, as dominant psychological paradigms focused on conditioning, reinforcement, and stimulus-response mechanisms, rather than internal mental states. It was not until the cognitive revolution of the 1950s and 1960s that consciousness research began to regain traction, as scholars recognised the importance of internal mental representations in explaining behaviour (Miller, 1956; Neisser, 2014). However, even during this period, consciousness remained a peripheral concern, with cognitive psychology primarily focused on memory, perception, and decision-making rather than subjective experience itself (Baars, 1988).

The true resurgence of consciousness as a serious scientific topic emerged in the latter half of the 20th century, particularly in the 1980s and 1990s, when significant technological and theoretical advancements provided researchers with the tools to empirically investigate subjective experience (Seth, 2018). Three major factors contributed to this shift. First, advancements in neuroimaging techniques, such as positron emission tomography (PET) and functional magnetic resonance imaging (fMRI), allowed scientists to observe and measure brain activity in real-time, enabling the identification of candidate neural correlates of consciousness (Koch, 2004). These tools provided empirical evidence linking subjective experience with neural processes, challenging the long-standing belief that consciousness was

too elusive for scientific investigation (Crick & Koch, 1990). Second, the emergence of strong theoretical models of consciousness, such as Baars' Global Workspace Theory (Baars, 1988) and Tononi's Integrated Information Theory (Tononi, 2004), provided testable hypotheses about the structure and function of consciousness. These theories framed consciousness not as a mystical or ineffable phenomenon but as a computational and neurobiological process, making it amenable to empirical scrutiny. Finally, interdisciplinary collaboration between neuroscientists, cognitive scientists, and philosophers fostered a more holistic approach to studying consciousness. The formation of dedicated academic societies, such as the Association for the Scientific Study of Consciousness (ASSC) in 1994, and the launch of peer-reviewed journals like *Consciousness and Cognition* and the *Journal of Consciousness Studies*, signalled a major turning point, cementing consciousness as a legitimate and fundable field of scientific inquiry (Bradford et al., 2024; Seth, 2018). By the 1990s, these developments led to the widespread recognition of consciousness as a central topic in cognitive neuroscience.

Today, ongoing research continues to investigate the mechanisms underlying conscious experience, the plausibility of machine consciousness, and the broader implications of consciousness studies for fields such as artificial intelligence, ethics, and medicine. For the field to advance meaningfully, it is essential to strive for conceptual clarity of the term. Despite decades of progress, the term "consciousness" remains notoriously elusive, with divergent theoretical frameworks offering competing definitions. Much of this definitional terrain - which significantly shapes the kinds of research questions neuroscientists ask - is grounded in philosophical literature. For example, philosophers typically distinguish between *phenomenal consciousness* - the subjective, qualitative character of experience, captured in Nagel's (1974) formulation of "what it is like" to be something - and *access consciousness*, which refers to information being made globally available for cognitive operations such as reasoning, reporting, and action (Block, 1995; Francken et al., 2022). This distinction has significant practical implications: an artificial system may instantiate access consciousness by processing and broadcasting information without possessing any phenomenal experience or subjective 'feel'. Further definitional tensions persist. Some accounts prioritise reflexive self-awareness or higher-order representational states as essential, while others emphasise minimal phenomenal awareness or raw sensory qualia (Stanford Encyclopedia of Philosophy, 2004/2014). Scholars emphasise that scientific progress depends on specifying which aspect or level of consciousness is under investigation. While the absence of a singular definition is

sometimes seen as a limitation, many argue that this conceptual plurality reflects the inherently multifaceted nature of consciousness - provided that terminological precision is maintained (Block, 2007). Moreover, definitional debates are deeply entwined with broader metaphysical questions - whether consciousness is reducible to physical processes (e.g., Dennett, 1991), entails non-reductive properties (Chalmers, 1996), or emerges from specific computational architectures such as global broadcasting (Baars, 1988) or integrated information structures (Tononi, 2008).

The challenges facing consciousness research

With the advent of targeted neurobiological research into consciousness, scientists gained new insights into the neural correlates and mechanisms of human behaviour through a range of interdisciplinary approaches. For instance, neuropsychology – through human lesion studies – has effectively shown causal links between specific brain structures (e.g., the occipital lobe) and aspects of consciousness (e.g., vision; Goodale & Milner, 2013; 1992; Kentridge, Heywood, & Weiskrantz, 1999; Kentridge, 2015; Beniczky et al., 2002). Similarly, neuroimaging techniques such as electroencephalography (EEG) have revealed correlations between brain wave patterns and various sleep and wakefulness states, providing a measurable predictor of consciousness levels (Ward, 2019).

While these contributions are significant, philosopher David Chalmers (1995) has argued that they are insufficient for a comprehensive understanding of consciousness. He distinguishes between the ‘easy’ problem, which addresses how science can provide functional accounts for various aspects of consciousness - like mapping taste sensation to specific brain circuitry or activity - and the ‘hard’ problem, which probes the subjective experience of consciousness itself – what it *feels* like to be something. Indeed, neuroscience might eventually map most cognitive, affective, and behavioural facets of the brain (e.g., the Human Connectome Project is currently working towards this goal; Van Esson et al., 2013), and this ambitious project may, theoretically, allow us to functionally explain how the brain orchestrates all aspects of conscious experience. Even then, Chalmers argues that the essence of what it is like to experience consciousness - such as 'what it is like to be a bat’; the *phenomenal* experience of self – may still elude scientific explanation (Chalmers, 1995; 2020). This 'hard' problem centres on why and how brain processes result in personal experiences (or ‘qualia’) at all – a question which remains mysterious. Qualia can be defined as phenomenal, first-person

properties of experience that encapsulate ‘what it is like’ to experience them, playing a pivotal role in bridging the brain's physical processes with subjective experiences (Shoemaker, 1991). Studies spanning neuroscience, psychology, and philosophy examine how changes in brain activity reflect in qualia, contributing to subjective experiences (Carhart-Harris & Friston, 2019; Salti & Bergerbest, 2022). Despite identifying neural correlates, the emergence and experiential aspects of qualia remain unresolved, and may be influenced by cultural and geographical diversities (Chalmers, 2020).

If neuroscience continues to struggle with explaining why we experience qualia and the first-person nature of our existence, then exploring how different communities conceptualise consciousness is arguably an important avenue for broadening our theoretical understanding. Perspectives-based research can reveal culturally embedded frameworks that might challenge, refine, or complement existing theoretical models whilst bolstering context-dependent epistemes that better serve indigenous contexts (Trnka & Lorencova, 2022). Incorporating Indigenous philosophies of mind invites alternative ontologies (beliefs about the nature of consciousness) and epistemologies (ways of knowing it), which collectively broaden the conceptual landscape of consciousness studies beyond the constraints of hegemonic Western paradigms. We argue this to be a worthy pursuit, but believe this effort can be further strengthened by looking deep into our most advanced models of the conscious brain and integrating our research findings within them.

While no current theory fully resolves the hard problem, some approaches, such as predictive coding, provide promising ways to narrow the explanatory gap (Seth & Bayne, 2022). By modelling consciousness as a self-organising, predictive process, predictive coding integrates perception, cognition, and affect into a unified framework, offering a structured way to investigate how the brain constructs reality (Friston, 2010). Although there are still differing views held by theorists within the predictive coding paradigm, it is highlighted here as a useful lens through which to comprehend the brain’s mechanistic orchestration of consciousness. The following section therefore explores this model in detail, positioning it as a useful theoretical lens for examining how consciousness is framed across different worldviews.

Predictive coding: a system-wide mechanism of consciousness

While it is beyond the scope of this paper to provide a comprehensive review of leading theories of consciousness, it will instead concentrate on select approaches that are pivotal to the theoretical framing that guided this study's conception and design. Notably, some researchers, acknowledging the hard problem of consciousness, believe it can be addressed through refinements in theoretical models, particularly using the predictive coding framework (Seth & Bayne, 2022; Friston, 2010). This approach describes the brain as a Bayesian inference system and incorporates insights from a range of disciplines like physics, computer science, and neuroscience to explain how cognitive processes are orchestrated in the brain (Smith, Badcock, & Friston, 2021; Corlett, Mohanty, & MacDonald, 2020).

Predictive coding suggests that the brain is guided by a set of predictive priors known as a generative model. These predictions about the self and the world influence the type of thoughts, feelings, and behaviours the individual engages in, with the brain regularly gathering information from the environment to update its generative model of reality. The motivation of the brain to do this is outlined by the 'Free Energy Principle' (FEP) – a mathematically supported principle suggesting that the brain will always strive to minimise discordance between predictions and actual reality (Friston, 2010). The term 'Free Energy' is borrowed from physics and thermodynamics, where it refers to the system's potential to do work, drawing a metaphorical link to the brain's effort to reduce prediction error and maintain equilibrium.

By minimising free energy, the brain actively resists the pull toward entropy (disorder) and maintains a stable, coherent sense of self (Friston, 2013). This is achieved through a dynamic process of 'active inference,' whereby the brain either updates its internal model to better match the world (learning) or acts on the environment to make it align with its predictions. In this way, the brain constructs reality while managing uncertainty and reducing surprise. Central to this process is the concept of a 'Markov blanket,' a theoretical boundary that separates the brain (or any living system) from its external environment. The Markov blanket encapsulates the sensory inputs that bring information from the outside world and the active outputs that influence it. The FEP ensures that this boundary remains intact, allowing the brain to process information and maintain its distinct identity in a high-entropy, unpredictable environment. By minimising free energy, the brain effectively defends its Markov blanket

against the surrounding chaos, ensuring that it remains organised and functional. Additionally, this process facilitates the filtering of information to refine predictions and differentiate 'self' from 'not-self' (Kirchhoff et al., 2018).

While the FEP is not a theory of consciousness in the narrow philosophical sense - and does not aim to solve the 'hard problem' - it provides an indispensable computational and biological framework for understanding the perceptual and self-organisational dimensions of conscious systems (Hohwy, 2020). We include it here not as an auxiliary model, but as a foundational framework in contemporary neuroscience that enables us to conceptualise consciousness as an emergent property of hierarchical inference and environmental coupling. Predictive processing and the FEP offer empirically grounded and mathematically principled tools for formalising how conscious systems resist entropy and maintain internal coherence (Clark, 2013; Friston, 2010). As such, we argue that engaging with this framework is not merely valuable but essential for any neurocognitive account that aspires to bridge brain function and conscious experience.

Thus far, it may seem that predictive coding prioritises cognitive and computational aspects of consciousness. But what of experiences beyond perceptual awareness? As the framework gained traction in the field, researchers began emphasising the foundational role of affect - our felt sense of valence and arousal - in conscious experience. Building on the work of affective neuroscientists such as Panksepp and Damasio, Solms (2019) notably advances the view that affect constitutes the “elemental form of consciousness.” However, it is important to note that while Panksepp and Damasio converge with Solms on the primacy of affect, they do not explicitly adopt the predictive coding or free energy frameworks—indeed, Damasio reportedly resisted this move (Solms, 2021). Solms, by contrast, integrates affective neuroscience with the Free Energy Principle, arguing that feelings emerge when homeostatic error signals—derived from deep interoceptive priors—breach the threshold of awareness.

Many would argue that this account does not resolve the 'hard problem' of consciousness (Chalmers, 1995); rather, it reframes it by offering a formal model of how subjective affective states may arise from inferential mechanisms that monitor and minimise physiological uncertainty. In this view, affective valence reflects the system’s estimation of its homeostatic viability: surprise or free energy signals ‘felt’ as emotionally valenced states, thus providing an internal metric of adaptive significance. These states, in turn, shape

attention, learning, and behaviour by modulating precision-weighting of predictive signals. This is consistent with work suggesting that affective and social signals act as priors in shaping conscious perception and action (Smith, Badcock, & Friston, 2021). Accordingly, this study adopts an integrative stance, seeking to bridge cognitive and socio-affective models of consciousness within a predictive processing framework.

Despite its robust explanatory power, it is argued that predictive coding models should still incorporate diverse cultural perspectives, as perception is necessarily context-bound (Vuust et al., 2022). Western models of cognition typically conceptualise consciousness as an individualistic process, whereas African philosophical traditions - particularly Ubuntu - frame consciousness as relational, emphasising interconnectedness over individual autonomy (Ajitoni, 2024). This contrast is critical because if consciousness is fundamentally a predictive, self-organising process, then it must also reflect the social and cultural structures that shape predictive priors (Friston & Frith, 2015). In this study, we explore this idea by examining how participants from an African context conceptualise consciousness, its functions, and its attribution to artificial systems. Although the three open-ended questions are not formal measures of predictive priors, they serve as probes into culturally grounded semantic and epistemic expectations - that is, the *informational priors* individuals bring to bear when reasoning about the nature and function of consciousness. We hypothesise that such priors may reflect a stronger emphasis on interpersonal, affective, and communal dimensions of experience than is typically captured in Western individualistic accounts.

This theoretical perspective also aligns with evolutionary neuroscience, where researchers argue that human consciousness evolved as a functional adaptation, enabling anticipatory regulation, problem-solving, and behavioural flexibility (Solms & Turnbull, 2018; Barrett, 2017).

While some accounts have historically adopted an epiphenomenalist stance - treating consciousness as a non-causal byproduct of neural activity - this position remains philosophically and empirically contested. It faces both the 'hard problem' of consciousness (Chalmers, 1995) and broader challenges of mental causation: namely, how subjective states could exert causal influence on behaviour. In contrast, predictive processing accounts reject epiphenomenalism by positing that consciousness - particularly affective and higher-order representations - plays a direct role in shaping action through the modulation of precision-

weighted prediction errors (Hohwy, 2020; Smith et al., 2021). In African sociocultural contexts, where social cohesion and relational identity are central to the construction of selfhood, these predictive models may be calibrated by shared affective and communal priors, rather than solely individualised cognition. Yet predictive coding remains underutilised in non-WEIRD populations, despite its emphasis on learning through structured regularities—many of which are culturally and historically situated. Expanding this framework to account for culturally embedded priors would enhance its explanatory scope, ensuring that consciousness theories reflect the full spectrum of human experience - across diverse cognitive styles, historical epistemologies, and communal structures of selfhood.

Recognising the social-affective components of consciousness

As mentioned, much of the contemporary consciousness literature centres on the role of *qualia*, or the felt, subjective character of experience (Chalmers, 1996). Although the notion of qualia is itself contested, this framing underscores the need to account for the emotional and intersubjective dimensions of consciousness. In this context, social cognition - particularly those aspects involving perspective-taking, emotion recognition, and affective resonance - becomes highly relevant. Affective neuroscience in its broad sense, introduced by Jaak Panksepp in 1998, can be drawn on to complement the predictive coding framework by emphasising the brain's fundamental apparatus for emotional processing, which communicates with our cognitive faculties to bring about our conscious experiences (Panksepp, 2005). These subcortical networks not only generate core affective states but also serve as the biological basis for attachment, social bonding, and emotional contagion - processes that are integral to conscious feeling (Panksepp, 2005). Accordingly, a comprehensive theory of consciousness must account for both affective and socially mediated aspects of experience.

This necessity becomes particularly clear when we consider that human consciousness does not exist in isolation - it is fundamentally social (Kelly et al., 2019). Our economies, politics, hierarchies, institutions, families, and bonding experiences all rely on our social cognitive abilities (Frith & Frith, 2023; Adolphs, 2003). These dynamics are so ingrained in daily life that they are often overlooked, yet they shape how we predict, interpret, and respond to the world. Recent advances in hyperscanning methods (e.g., using brain imaging methods to record simultaneous brain activity in more than two people) and the development of *second-*

person neuroscience (i.e., a focus on real-time, reciprocal social interaction) have demonstrated that intersubjective processes are critical to the emergence and maintenance of a first-person perspective (Dumas et al., 2010; 2011; also see Fotopoulou and Besharati, 2023). The proposed association between consciousness and social cognition means that much of our generative model of reality is socially calibrated (Besharati et al., 2016; 2022; 2024). Our self-concept, emotional well-being, and cognitive development are profoundly shaped by the feedback we receive from others (Brummelman et al., 2015; Frith, 2008) . From learning skills and acquiring language (Vygotsky 1978; 2012) to experiencing the deepest pleasures and pains of life, social-affective processes play a defining role. Even in highly individualistic societies, social interactions remain central to our cognitive and emotional landscape. However, little is known about how social-affective priors are shaped in collectivist cultural contexts, such as those found in many African communities. While this study's open-ended survey items are limited in scope, they offer a starting point for exploring culturally specific conceptualisations of consciousness (particularly in relation to its social and affective dimension).

Similarly, South African neuropsychologists have explored how emotional and unconscious processes are central to the formation of subjective experiences (Solms & Turnbull, 2018). They have argued that understanding how emotional systems contribute to conscious experience is essential for better understanding the quality of phenomenal consciousness and thus, solving the hard problem of consciousness (Solms, 2014). Solms emphasises that feeling is primary - the capacity to experience pleasure and unpleasure underpins all higher cognitive processes (Solms, 2019). Evidence from neuropsychology and lesion studies further supports this idea, showing that basic consciousness persists even in the absence of the cerebral cortex. Indeed, Solms (2019) discusses cases of hydranencephalic children, who lack cortical structures yet display emotional awareness and behavioural responses, reinforcing the idea that consciousness is deeply rooted in subcortical mechanisms.

Contemporary affective neuroscience intersects with predictive processing by illustrating how emotions modulate perception and action through mechanisms such as precision-weighted prediction errors (Seth & Critchley, 2013; Seth, Suzuki, & Critchley, 2012). However, it is important to distinguish between theoretical camps. For instance, Barrett (2017) adopts a constructionist account, arguing that emotions are not biologically hardwired but actively constructed by predictive inferences based on prior experience and contextual

cues. This contrasts with the basic emotion view advanced by Panksepp and Solms, which posits innate affective circuits with evolutionary continuity. While both frameworks invoke predictive coding, they differ in whether emotion is treated as inferred or intrinsic. Rather than attempting to collapse these views, this study recognises them as offering complementary insights into the dynamic interplay between affect, cognition, and prediction. This complementarity is also visible in neuroanatomical models. While Solms emphasises subcortical affective origins, studies such as Pessoa and Adolphs (2010) illustrate how cortical–subcortical interactions - particularly involving the amygdala - shape the appraisal of emotional salience and influence attention and executive functions. These findings suggest a hierarchical system, where basic feeling arises from deep brain structures, and cortical networks confer contextual meaning, behavioural modulation, and goal-directed nuance.

The brain's emotional faculties also scaffold intersubjective experiences. The discovery of mirror neurons in the 1990s suggested that the brain has a built-in mechanism for simulating the experiences of others, allowing us to represent and respond to others' emotional states (Gallese & Goldman, 1998). More recent work has emphasised the role of embodiment in social cognition and self-awareness, demonstrating that emotional processing is deeply intertwined with bodily states and social interactions (Besharati & Fotopoulou, 2021; Fotopoulou & Besharati, 2023). These findings contribute significantly to the understanding that emotions are not isolated within individuals but are part of a dynamic, intersubjective system shaped by social interactions. Here, it is argued that contributions from social-affective neuroscience support a more holistic view where consciousness incorporates an appreciation of the self's development in the context of both others and the wider sociocultural environment.

Ubuntu and consciousness science

The link between affect and cognition is crucial for understanding how predictive priors are socially shaped. The African philosophy of *Ubuntu*, widely embraced across Southern Africa, encapsulates the principle that one's humanity (*umuntu*) is realised through others (*abantu*), often expressed in the phrase *"I am because we are"* (Ajitoni, 2024). This worldview positions relational interdependence (as opposed to individual autonomy) as the foundation of personhood, emphasising empathy, communal responsibility, and emotional resonance. For

instance, moral worth is not tied to internal mental states alone but demonstrated through socially visible behaviours such as generosity, compassion, and responsiveness to others' needs. Supporting this, Kpanake (2018) notes that African conceptions of self are deeply embedded in social roles and obligations, such that consciousness itself is perceived not as an isolated phenomenon, but as inherently *co-constructed* through relationships. Likewise, Idang (2015) argues that communal values shape not only interpersonal life but broader social, political, and economic institutions, embedding social cognition into the very structure of lived reality. These perspectives offer a culturally grounded counterpoint to Western models of consciousness, providing a comparative base for analysing interpersonal conceptions of consciousness in the current study's African sample.

Psychosocial studies further substantiate the importance of social-affect in conscious experience. Harling et al. (2020) found that regular social interactions among older adults in rural South Africa were linked to better cognitive health, illustrating how social engagement not only enriches life but also sustains cognitive function. Drawing on neuroimaging data, Schurz et al. (2021) propose a hierarchical model of social cognition, demonstrating that conscious experience emerges from the integration of cognitive and affective processes - ranging from abstract mentalising to embodied emotional resonance. The argument that predictive priors are socially calibrated is thus supported, particularly in collectivist cultures, where social-affect plays a dominant role in shaping consciousness (Bolis, Dumas, & Schilbach, 2023).

Moreover, research on embodiment shows that cognition is deeply influenced by bodily and social interactions. Farina (2021) argues that embodied cognition provides a robust framework for explaining human cognitive behaviour, aligning with the predictive coding view that perception, action, and affect are integrated processes. Similarly, Canino et al. (2022) demonstrate that Theory of Mind (ToM), imitation, and empathy are not merely cognitive constructs but are deeply intertwined with our bodily experiences, affecting how we interact with others on both a neural and phenomenological level.

While neuroimaging techniques have provided valuable insights into social cognition, researchers are increasingly recognising the value of qualitative approaches in studying these processes. Malu (2025) notes that social cognition research must account for lived phenomenological experiences, as understanding the subjective dimensions of human interactions is as crucial as mapping neural correlates. This aligns with the broader argument

that any comprehensive theory of consciousness must incorporate the social and affective dimensions of human experience.

Taken together, this study aligns with the argument that consciousness is not merely an individual computational process but also a social and affective phenomenon. The evidence from affective neuroscience, predictive coding, and cultural psychology strongly suggests that conscious experience is dynamically shaped by our social environment, emotional interactions, and cultural context.

Prominent scientific perspectives on consciousness in artificial intelligence

As the scientific community continues to grapple with developing a comprehensive model of consciousness - one that can clearly define its sufficient conditions - considerable debate has emerged over where the boundaries of those conditions should be drawn (LeDoux et al., 2023). If it emerges principally from activity in the brainstem (Solms, 2019), is comparative anatomy the right approach for gauging consciousness in other animals? If the salience of conscious experience is linked to complexity and integrated information flow (Baars, 1988; Tononi, 2004), then what of artificial systems that are becoming increasingly complex? This more general inquiry into the possibility of conscious machines underlies much of the renewed debate surrounding artificial intelligence (AI), especially given recent advances in generative systems such as large language models (LLMs) (Dehaene et al., 2021; Butlin et al., 2023).

In the context of this study, the term “AI” refers primarily to contemporary large-scale, transformer-based language models (e.g., GPT-4), which generate human-like outputs by predicting token sequences based on vast text corpora. These models are non-embodied, non-sentient, and lack internal affective states, yet they display remarkable functional capabilities, including apparent reasoning, inference, and linguistic fluency. It is therefore essential to distinguish between intelligence - understood here as computational problem-solving and generalisation - and consciousness, which entails subjective awareness and phenomenal experience. These constructs are often conflated in public discourse, but they are not synonymous (LeDoux et al., 2023)

Several recent studies have tested whether LLMs demonstrate functional proxies of perspective-taking, an ability often associated with Theory of Mind (ToM). For instance, Kosinski (2024) reports that GPT-4 achieves high accuracy on certain ToM benchmarks, comparable to six-year-old human performance on some tasks. However, these findings are highly contested. Critics point out that such behaviour may reflect statistical mimicry rather than genuine mental modelling, especially given the models' training on large-scale human-generated data. Accordingly, it remains unclear whether LLMs are generating these capacities through emergent intelligence or merely interpolating them based on pattern regularities (Bender & Koller, 2020).

Similarly, LLMs exhibit content effects in logical reasoning tasks - a phenomenon in which semantic context influences deductive reasoning, as it often does in humans. Studies have shown that LLMs' performance on tasks such as the Wason selection task or syllogistic inference can shift based on the semantic framing of the inputs (Dasgupta et al., 2022; Lampinen et al., 2024). While this resemblance to human cognition is notable, it must be interpreted cautiously. The key debate is not whether LLMs appear to reason like humans, but whether such behaviour implies anything about underlying subjective experience. Without embodiment, intentionality, or affective grounding, such models may be capable of simulating reasoning while remaining entirely non-conscious. As such, this study treats AI consciousness as more of a folk theoretical concept, exploring how lay participants conceptualise its boundaries and what properties they view as indicative of subjective awareness.

As one might imagine, many scholars in the field remain sceptical about whether computational systems can be conscious when our current understanding of consciousness is deeply linked to physical embodiment (LeDoux et al., 2023; Farina, 2021). Theories of embodied cognition argue that cognition is not merely computational but fundamentally shaped by the body's sensory and motor interactions with the world (Gallagher, 2000; 2006). This has informed research in areas such as immersive virtual reality, where studies demonstrate that embodying different avatars within virtual environments can alter perception, behaviour, and even implicit biases (Higgins et al., 2023). The fact that subjective experience can shift so dramatically based on bodily states and sensorimotor feedback highlights the extent to which consciousness is inherently tied to the body (Gallese, 2005). Interestingly, this aligns with some African conceptions of consciousness and the human

condition, where the phenomenal experience is often seen as inseparable from life and the physical body (Mbiti, 1990). Importantly, embodied cognition is also accounted for in predictive processing and FEP frameworks, which model interoceptive signals - internal bodily states such as hunger, pain, or heart rate - as central to how organisms construct affective and conscious experience (Seth & Friston, 2016).

These perspectives suggest that embodiment is not merely a peripheral aspect of consciousness but may even be a core requirement for its emergence – at least in a sense similar to human consciousness. Current AI systems, which lack any direct sensorimotor grounding in the world, may therefore be fundamentally incapable of generating anything akin to human conscious experience. While advanced AI models can simulate cognitive processes, their disembodied nature may place a hard limit on their ability to instantiate true or any phenomenal awareness. A further aim of this study was therefore to explore whether participants' perspectives on AI consciousness would reflect this emphasis on embodiment and biological grounding as essential to conscious experience.

Some theories have proposed criteria for consciousness, such as global information availability (Dehaene et al., 2021), integrated information (Tononi, 2004), or affective self-modelling (Solms, 2019). The struggle for consensus, however, makes it difficult to determine whether any artificial system meets these criteria in a philosophically or empirically robust sense (LeDoux et al., 2023).

To scientifically ascertain whether consciousness exists in AI, we would need at least one of these theories to be accepted as truth (LeDoux et al., 2023). While some theorists argue that there is *no principled reason* artificial systems could not eventually satisfy such criteria, this remains a contentious claim, especially given the lack of affective embodiment or homeostatic self-organisation in current AI (Butlin et al., 2023).

Despite this, emerging research shows that laypeople have increasingly tended to attribute conscious states to artificial systems. For example, Colombatto and Fleming (2024) conducted a pre-registered online study with 300 U.S. participants to examine folk intuitions about AI consciousness. Participants were shown text outputs from ChatGPT and asked to rate, via Likert-type items, the extent to which the model possessed various cognitive and experiential capacities (e.g., reasoning, emotion, subjective experience). The authors reported

that a majority of participants endorsed some degree of AI consciousness. However, it is important to interpret this cautiously: endorsements often included ambivalent responses (e.g., “Neutral” or “Somewhat agree”), which do not unequivocally assert belief in AI sentience. Moreover, the items themselves tapped perceived capacities rather than philosophical endorsement of phenomenal awareness per se.

Notably, participants were more likely to attribute consciousness when they perceived the AI as capable of emotional or self-referential responses, suggesting that affective and social cues were more predictive of perceived sentience than computational intelligence alone (Colombatto and Fleming, 2024). The same study found that prior exposure to ChatGPT increased the likelihood of attributing consciousness, and participants tended to overestimate the extent to which the general public shared these views. These findings suggest that folk theories of AI consciousness are shaped less by biological plausibility and more by interpersonal cues - such as linguistic fluency, simulated emotion, and perceived social presence.

While studies like Colombatto and Fleming’s offer important insights into public attitudes, they do not resolve the metaphysical or neurocomputational question of AI consciousness. Rather, they illuminate how human intuitions evolve in response to human-like behaviour in machines. This reinforces the need to investigate culturally and contextually specific interpretations of consciousness in AI, especially in societies where relational and social-affective dimensions of personhood are central. Given that LLMs lack direct sensory or interoceptive access to the world but still elicit perceptions of sentience, such research can help map how cultural schemas influence the thresholds at which ‘consciousness’ is attributed, whether rightly or wrongly.

A related and increasingly scrutinised phenomenon is the tendency for humans to anthropomorphise machines - attributing human-like qualities, such as intelligence, emotions, and even consciousness, to artificial systems. This inclination has been well-documented in human-AI interactions, where the realism of AI-generated responses can lead users to ascribe sentience to non-conscious entities. Importantly, the distinction between *sentience* and *consciousness* is often blurred in public discourse: while sentience typically refers to the capacity for basic feeling or sensation, consciousness generally implies broader faculties such as self-awareness, intentionality, and reflective thought. This conceptual slippage complicates

public debates about AI's capabilities. For example, Fernandez et al. (2024) found that approximately 40% of American participants believed sentient AI to be a possibility - largely because their interactions with advanced systems felt socially and emotionally human-like**.**

Interestingly, the study reported higher endorsement of AI sentience among younger individuals and men. This may reflect a generational familiarity with human-computer interaction, greater exposure to anthropomorphic media, or socialised gender differences in comfort with novel technology. However, these perceptions are far from universal. A cross-cultural study by Złotowski et al. (2017) indicated that perceptions of AI are not universal; rather, they are heavily mediated by cultural norms and the extent to which AI systems are seen as aligning with or respecting those norms. It is worth noting that this study was conducted prior to the rise of large language models (LLMs) like ChatGPT-4o, which represent a significant leap in AI's ability to mimic human conversation. Given the rapid advancements in AI sophistication over the past few years, these findings warrant re-examination in light of contemporary LLMs, as public attitudes may be shifting considerably.

Furthermore, societal and existential beliefs may serve as another critical determinant of whether AI is perceived as capable of consciousness. Haslam (2023) suggests that in cultures where consciousness is believed to require a divine or transcendent component, the likelihood of attributing sentience to AI is markedly lower, as artificial systems are perceived as incapable of embodying sacred or life-giving properties. This raises an intriguing question about whether participants from an African context, where many cultural traditions embed spiritual dimensions into their understandings of selfhood and mind, would demonstrate similar scepticism towards AI consciousness.

As anthropomorphic perceptions of AI grow, companies have strategically leveraged this tendency by designing AI systems with increasingly human-like characteristics, aiming to enhance trust and collaboration in human-machine interactions (Dang & Liu, 2024). While this approach has practical advantages, including improved user engagement and integration of AI into daily life, it also amplifies the risk of erroneous attributions of consciousness to AI systems. Such misattributions may lead to moral confusion, misplaced empathy, or even the delegation of emotionally sensitive tasks (e.g., caregiving or therapy) to systems incapable of genuine understanding or ethical responsibility.

Moreover, excessive anthropomorphism can obscure AI's fundamental limitations, such as their lack of self-awareness, inability to understand meaning beyond pattern recognition, and vulnerability to hallucination or contextual failure. These systems excel at mimicking surface-level human responses but do so without subjective experience, intentionality, or grounding in embodied cognition (Scorici et al., 2024). When these limitations are overlooked, there is increased risk of over-reliance, inappropriate trust, and misuse in high-stakes contexts such as education, mental health, or justice systems.

Additionally, most contemporary AI systems are trained on datasets and designed using cognitive frameworks rooted in Western epistemologies, often encoding implicit values and assumptions. This raises concerns about the erosion of cultural diversity and epistemic sovereignty when such systems are deployed globally (Adams, 2021). In regions such as Africa, where indigenous knowledge systems and relational worldviews may diverge from the individualistic and task-optimised logic of Western AI design, the widespread adoption of such technologies risks epistemic misalignment or cultural marginalisation.

While anthropomorphism does not equate to the attribution of true consciousness, heightened anthropomorphic tendencies - intensified by rapid technological advancements - may increase the likelihood of perceiving AI as sentient. Some have framed this phenomenon through a predictive coding lens, arguing that our tendency to anthropomorphise AI arises from Bayesian priors that predict consciousness based on human-like actions (LeDoux et al., 2023). Extending this logic, artificial agents may become so well-integrated into one's generative model of social interaction that they evolve into a new archetype of what social connection "feels like". Historically, generative models of social engagement were shaped exclusively through interactions with other humans - or, in some cases, imaginary companions (Davis et al., 2023). However, as AI systems become increasingly sophisticated, they may begin occupying this social space in ways that could reshape human social cognition and development. This underscores the importance of investigating the broader cognitive and societal consequences of AI anthropomorphism. Indeed, attributing - or erroneously denying - feelings to seemingly conscious artificial entities presents profound ethical and societal challenges. If AI were to develop consciousness, the failure to recognise its moral status would pose serious ethical dilemmas; conversely, attributing sentience to non-conscious systems could distort human social norms and decision-making (Bayne et al., 2024). This study, therefore, examined whether the widespread tendency to

anthropomorphise AI translates into attributions of consciousness and how this dynamic manifests within an African context, where spiritual, social, and epistemological frameworks may uniquely shape perceptions of AI.

Alternative approaches and perspectives from Africa

Thus far, the value of cognitive neuroscience and psychology in providing insights into consciousness has been proposed, despite the challenges inherent in the field. Next, we argue that incorporating diverse perspectives (in this case, those from African thought) is a crucial step toward developing a more comprehensive and inclusive understanding that transcends cultural boundaries. Given the African context of this study, an examination of the rhetorical and conceptual shifts found in alternative discourses on consciousness is warranted. To illustrate this, insights from some of modern history's most eminent Black thinkers - Du Bois (1903), Fanon (1952), and Biko (1978) - will serve as a starting point.

It is critical to note that these thinkers and their contemporaries have used the word 'consciousness' in a very different sense to mainstream scientific and philosophical communities. However, it is still critical to include these voices to the expanding narrative in conscious science as these theories may have had an influence on lay-person perspectives in Africa on the term 'consciousness'. It would be amiss to assume that all participants in this research will define or react to the word 'consciousness' in the same way as cognitive scientists. For example, Du Bois' (1903) concept of 'double consciousness' - the feeling of viewing oneself through the eyes of others - illustrates the complex interplay of identity and perception, especially relevant in the African context (Owens, 2005). Fanon's analyses highlight the psychological impact of colonialism, describing an identity crisis in Africans forced to assimilate into white society, leaving them in limbo - neither fully accepted in white spaces nor rooted in their African heritage (Fanon, 2023). This cultural adoption creates internal conflict and a fragmented consciousness, a theme that mirrors Du Bois' observations on the divided self. Both theorists highlight how black consciousness is deeply influenced by socio-cultural, political, and historical contexts. Taking these insights on board, consciousness may be seen not merely as a perceptual phenomenon but as a continuously evolving narrative, shaped by historical and collective memory.

From a psychological standpoint, *narrative* notions of consciousness involve the construction of personal identity through storytelling (Fireman, McVay, & Flanagan, 2003). Individuals make sense of their experiences by organising them into coherent narratives, which in turn contribute to self-understanding and memory formation. This approach aligns with Du Bois' and Fanon's arguments, as their writings suggest that consciousness itself is inseparable from the historical and social narratives one inherits (Owens, 2005; Fanon, 2023). In addition, Steve Biko, a key figure in the Black Consciousness Movement during South Africa's apartheid era, highlighted the importance of African culture in constructing a positive black identity, countering the derogatory stereotypes of apartheid and enhancing self-worth and dignity (Biko, 2015). This suggests that consciousness, in this context, is not an isolated phenomenon but a dynamic, socially embedded experience that can be shaped by ideological and political struggle**.**

In historiography, *historical* consciousness is a term used to describe how historical narratives are constructed and examines the paradigms that shape our understanding of history (Wise et al., 2023). Studies in education further explore how historical consciousness influences the way individuals perceive their position in time and in relation to their collective past (Pratama, Saputra, & Hikmawaty, 2024). This means that, within African contexts, consciousness may be viewed not only as an immediate perceptual phenomenon but as an evolving awareness of history, social change, and collective identity.

In light of these perspectives, it must be acknowledged: many of these narrative accounts have not been empirically grounded, making integration with contemporary neuroscience theories challenging. While these perspectives offer rich insights, they often lack the experimental and quantitative validation needed to engage with cognitive science (Díaz, 2013). This project thus provides an opportunity to bridge that gap by examining African conceptions of consciousness through both empirical and theoretical lenses, drawing from firsthand perspectives rather than relying solely on historical texts. By embedding African epistemologies within a structured research framework, the scientific community can rectify the lack of empirical engagement with these perspectives and assess their relevance to modern discussions on consciousness.

Having examined the history of consciousness, major western models, social-affective perspectives, and western theories on AI consciousness, a notable gap remains: what about African conceptions of AI consciousness? While a growing body of literature explores

African perspectives on consciousness, little has been done to examine how these frameworks apply to AI. Existing works, such as Attoe et al. (2023), have initiated this discussion, but the flow of empirical support to the field remains largely undersupplied. The present study addresses this gap, investigating whether African philosophical traditions shape perceptions of AI consciousness in ways that diverge from dominant western models. By integrating these multiple perspectives, the aim is not merely to document African understandings of consciousness but to engage with them in a manner that is both empirically rigorous and philosophically generative. As AI systems continue to evolve, incorporating non-western perspectives will be crucial in shaping global discourse on machine intelligence and its potential for consciousness. This study therefore provides a novel contribution to both African philosophy of mind and the broader debates on consciousness and its application to AI.

Research Question & Hypotheses

The primary research question of this study is: What are African perspectives on the meaning and functions of consciousness and its application to artificial intelligence? A secondary research question is: what relationships exists between various psychosocial factors and perspectives on consciousness and AI? The primary hypothesis guiding this study is that when sampling these perspectives from an African population, more collective and intersubjective perspectives of consciousness that are rooted in sociocultural and postcolonial narratives will be uncovered.

The next chapter outlines the research design, methodology, paradigm, and ethical considerations of this study. Chapter 4 presents the results, providing a detailed analysis of both basic quantitative insights (such as frequency statistics) and the findings from an extensive qualitative analysis. Chapter 5 then interprets and discusses these results in relation to the broader literature, concluding with an examination of the study's limitations.

Chapter 3: Methods

Research Design

This study is exploratory by design, serving as a pilot study in conceptions of consciousness. To achieve this, we adopted a cross-sectional, survey-based design. A cross-sectional design, which collects data at a single point in time, was deemed well-suited to the study's limited timeframe while mitigating response biases associated with repeated participant surveys (Creswell & Creswell, 2017). This methodological flexibility was critical given that many prevailing models of consciousness (and their applications to AI) are shaped by Euro-American ontologies that may not fully capture indigenous epistemologies (Thambinathan & Kinsella, 2021). Contextually, this project was embedded within a wider international research initiative investigating interdisciplinary perspectives on consciousness, funded by the Canadian Institute for Advanced Research (CIFAR; the website for the larger study is: https://www.whatisconsciousness.io/). The supervisors of this study were co-investigators in this broader initiative, which involved an initial pre-survey distributed internationally, drawing on the same questions used in this study. The results of this pre-survey were used to develop a more refined survey on interdisciplinary perspectives of consciousness, positioning this study as part of a larger effort to explore consciousness through global and cross-cultural lenses.

Research Paradigm

Given its exploratory nature, the study aligns with both interpretivist and post-positivist research paradigms while remaining paradigmatically flexible. Interpretivism emphasises subjective meaning-making and the sociocultural contexts shaping human experience, challenging the positivist assumption of an objective reality (Ikram & Kenayathulla, 2022). This approach is particularly suited to research on consciousness and AI, as both constructs are deeply embedded in cultural and philosophical traditions. An open-response survey aligns with interpretivism by allowing participants to articulate their perspectives in their own terms, free from externally imposed theoretical frameworks. For instance, African epistemologies, such as Ubuntu, conceptualise consciousness relationally, diverging from dominant Western cognitive models that tend to centre individual selfhood (Ajitoni, 2024).

Interpretivism ensures these perspectives are analysed within their own cultural logic, rather than through an external paradigm that may distort their meaning.

At the same time, the study bears a strong post-positivist influence, recognising that while there may be a reality existing independently of human perception, such a reality may best be understood through theory-laden observation (Ikram & Kenayathulla, 2022). Post-positivism rejects the absolute objectivity of positivism, acknowledging that knowledge is shaped by context, values, and prior assumptions. However, unlike strict interpretivism, it maintains that systematic inquiry can approximate an understanding of complex phenomena (Junjie & Yingxin, 2022). This study embraces post-positivist principles by employing thematic analysis to identify patterns across open-ended survey responses. While consciousness and AI appear to be abstract and culturally contingent, the study systematically examines how African epistemologies construct meaning around these issues. This structured approach balances interpretivist flexibility with post-positivist efforts to identify broader thematic consistencies, ensuring analytical rigour while honouring diverse perspectives. Furthermore, post-positivism enables methodological pluralism, a key consideration in African research, which frequently integrates both qualitative and quantitative approaches to accommodate epistemic diversity (Flick, Rafaely, & Bowman, 2025). The project thus incorporates elements of both traditions, ensuring that culturally embedded understandings of consciousness are foregrounded while remaining analytically rigorous.

This study deliberately eschews rigid methodological dogma, resisting the practice of ‘methodolatry’ - a strict adherence to method at the expense of research flexibility (Romm, 2001). Instead, we adopt a question-driven selection of methods, ensuring that methodological choices serve the research objective rather than being constrained by convention. This pragmatic stance also enables cross-paradigmatic engagement, integrating elements of interpretivism and post-positivism to explore subjective realities while ensuring the findings are systematically and thematically structured. Ultimately, this research is not intended to produce a conclusive statement on African perspectives of consciousness in neuroscience but rather as an early exploratory step - one that contributes to a growing international discourse and helps establish a trajectory for further empirical inquiry. By prioritising exploration over prescription, the study lays the groundwork for future, more intricate engagements with consciousness, AI, and African epistemologies in the neuroscientific community.

Sample and Sampling

This study employed a non-probability, purposive, and convenience sampling approach to recruit participants across the African continent. Given the study's focus on African perspectives on consciousness and AI, purposive sampling was used to ensure that participants met the inclusion criteria of self-identifying as African and being over the age of 18. Convenience sampling was chosen for its efficiency in participant recruitment within the practical constraints of a master's research project, such as limited time and budget. To extend the sample beyond the initial recruitment pool, snowball sampling was employed, allowing participants to share the study invitation within their personal networks, thereby enhancing the reach and diversity of the sample (Etikan, Musa, & Alkassim, 2016).

The final sample comprised 125 participants (N = 125). While recruitment efforts aimed for broad African representation, the majority of respondents were students from the University of the Witwatersrand (Wits) in Johannesburg, South Africa. This was primarily due to the university's automated email system, which disseminated the study invitation to thousands of registered students via the university registrar (see Procedure section below). This method proved the most effective in securing participants. However, additional recruitment efforts were undertaken to obtain a more diverse sample beyond the university setting. These included social media advertisements, outreach at community events, and snowball sampling. Although participation was not obtained from every African country, the study invitation was widely disseminated, leading to responses from various regions across the continent, including South Africa, Egypt, and many countries in between. This broad geographical spread, while not fully representative of all African nations, contributed to a more nuanced dataset incorporating a range of perspectives.

Recruitment followed established postgraduate research protocols. The primary recruitment method involved an initial call for volunteers through the university's mailing system, inviting students to participate in an online survey hosted on a website built by a member of the CIFAR team, This strategy allowed for the targeted acquisition of participants, improving the study's internal validity and specificity. However, as with any convenience sampling approach, generalisation of findings remains limited (Creswell & Creswell, 2017). To

counterbalance this limitation, snowball sampling facilitated the expansion of the sample beyond the university population, increasing external validity by drawing in participants from diverse backgrounds (Emerson, 2015).

Measures

Open-ended questions

Three open-ended questions were asked in the online survey (see **Appendix B**). These questions were designed according to the primary aims of the study and were worded as follows: (1) In your understanding, what is consciousness? (Please elaborate and explain), (2) What (if anything) is the function of consciousness? (Please elaborate and explain), (3) Under what conditions (if any) would you think an AI system is conscious? (Please elaborate and explain). Each question had a 500 word limit, allowing participants to elaborate freely and provide a relatively high degree of detail to their answers if they so wished. To ensure the clarity, validity, and reliability of these questions, they were piloted on a small preliminary sample selected by the researcher. This pilot phase helped identify any issues related to ambiguity, bias, validity, or item order effects (Creswell & Creswell, 2017). Based on the pilot feedback, the research team deemed the questions to be effective and no significant modifications were required.

Demographic questionnaire

The online survey also included a detailed demographic questionnaire (see **Appendix A**). The questions were developed in collaboration with the wider team in which the project is embedded, that included questions used in previous studies in South Africa (Kazadi, Watermeyer, & Besharati, 2024). The questions captured key demographic variables, including highest level of education, self-identified race, gender (asked in terms of preferred pronouns), academic and professional status, type of employment, industry and occupation, country of origin, primary language, socioeconomic status, type of residential area (such as rural or urban), parental status, religious affiliation, and political affiliation. By placing the demographic questions at the end of the survey, the study minimised potential priming effects that could have influenced responses to the open-ended questions (Dabengwa, Young, & Ngulube, 2023). This sequence allowed participants to engage freely with the conceptual aspects of consciousness before reflecting on their own personal and social backgrounds.

Given the unique diversity of this sample, capturing a broad range of demographic variables was particularly important, as it allowed for an exploration of how intersecting social, cultural, and ideological factors may shape perspectives on consciousness. Unlike many studies conducted in the Global North, where religious affiliation and sociopolitical identity are often omitted from consciousness research, this study considered these dimensions essential, as prior literature suggests potential correlations between belief systems and conceptions of consciousness (Pyysiäinen, 2021). Moreover, previous research has shown that various religious and spiritual traditions, such as monistic Hinduism and Buddhism, have deeply embedded concepts of mind and consciousness (Costines, Borghardt, & Wittmann, 2021). In these traditions, consciousness is not only a fundamental aspect of belief but often the central focus of spiritual practice, with the pursuit of deeper awareness and understanding being a primary goal.

Procedures

Following ethical clearance from the Wits Human Research Ethics Committee (Non-Medical) (see **Appendix I**) and administrative permission from the University Registrar (see **Appendix J**), data for this study were collected via online self-report surveys hosted on the www.whatisconsciousness.io platform. The survey was disseminated to voluntary participants across various African countries. This project formed part of the first phase of a larger international study on consciousness, funded by the Canadian Institute for Advanced Research (CIFAR). Accordingly, the same survey link and instrument used in the global study were employed in this research. A co-author from the international project developed a dedicated survey website, which served as the entry point for participants. This approach allowed the primary researcher access to the full international dataset, from which responses from African participants were filtered and extracted for analysis in the present study. Upon accessing the survey, participants were presented with detailed information regarding the study's aims, procedures, voluntary nature, and ethical protections (see **Appendix C**). Informed consent was obtained electronically prior to participation, in accordance with the university's ethical guidelines and international standards for online research. Participants then proceeded to complete the main survey, which comprised three open-ended questions designed to elicit subjective understandings of consciousness and its potential application to

artificial intelligence. Responses were submitted anonymously, and no personally identifying information was collected. Participation was estimated to take no more than 15–20 minutes.

Qualitative Analysis

Following data collection, all responses were thoroughly reviewed, and only two responses were excluded from analysis due to incomplete answers or missing demographic data. Since the data were already in textual form, no transcription was required, allowing for a streamlined analytical process.

The first stage of analysis involved downloading the dataset from Airtable, the web-based platform where responses were stored and managed. The dataset was exported as an Excel spreadsheet and subsequently separated into two distinct files: one containing all demographic information, and another containing the qualitative responses to the three open-ended questions. The qualitative responses were further divided into three separate PDFs, each containing responses to one of the three key survey questions on consciousness. This division facilitated a structured and focused thematic analysis for each question individually, rather than attempting to analyse all responses collectively.

To ensure a rigorous and transparent analysis, thematic coding adhered to Clarke & Braun's (2017) six-phase approach. First, familiarisation with the data involved reading through responses multiple times, allowing for deep engagement with the raw text. During phase two, initial coding was conducted in ATLAS.ti (ATLAS.ti Scientific Software Development GmbH, 2023), where meaningful segments of data were systematically labelled to capture emerging ideas. These codes were then refined and clustered to aid with the generation of themes (phase three), where overarching patterns in participants' descriptions of consciousness were identified.

Although the use of AI-assisted coding was initially explored during the design phase of the project, it was ultimately excluded from the final analysis. Preliminary tests using OpenAI's ChatGPT-o1 revealed that while the AI produced outputs that were broadly similar to the manual coding, the thematic structures lacked nuance, contextual sensitivity, and theoretical depth. Moreover, there was no dialogical engagement or interpretive reflexivity - key elements of qualitative analysis grounded in the interpretivist tradition (Flick, Rafaely, &

Bowman, 2025). As such, the decision to rely solely on manual thematic analysis was taken to preserve analytic integrity and ensure that the themes were developed through the researcher's direct, reflexive engagement with the data.

This third stage of the analysis was therefore where the researcher worked most in dialogue with the data, as themes do not simply "emerge" but are actively constructed through interpretive processes shaped by theoretical orientation and subjective insight (Morriss, 2024). The fourth phase, reviewing themes, involved refining these thematic structures to ensure internal coherence and conceptual distinction. In the defining and naming stage (phase five), themes were sharpened and articulated in ways that captured their essential features while maintaining alignment with the study's broader aims. Finally, in producing the report (phase 6), the analysis was synthesised into a structured narrative, where themes were substantiated with participant excerpts and, where applicable, linked back to previous work in the field.

Conducting thematic analysis separately for each survey question was a deliberate methodological decision that aimed to improve analytical clarity and conceptual integrity. The three questions addressed different but interrelated aspects of consciousness, each eliciting responses with unique patterns of meaning. If all responses had been lumped together, the distinctiveness of thematic structures across the questions could have been lost, leading to conceptual overlap and an inability to distinguish how participants' perspectives varied depending on the framing of the question. By treating each question as an independent unit of analysis, the study was able to capture the nuanced ways in which participants articulated their beliefs about the nature, functions, and potential AI applications of consciousness.

To ensure a systematic and rigorous thematic analysis, the PDFs of qualitative responses were uploaded to Atlas.ti, a web-based qualitative data analysis tool. This software, which operates on a subscription basis, facilitated the efficient coding of text, allowing for the identification of recurring patterns and concepts. Atlas.ti enabled precise annotation of excerpts, systematic code categorisation, and real-time tracking of code frequencies. It also automatically organised codes into a separate tab, allowing for easy clustering of similar codes into broader thematic categories. This structured approach enhanced reliability and ensured that themes emerged directly from the data rather than being imposed by researcher

expectations. The codebooks included in the appendices of this document (see **Appendices F, G, and H**) were generated based on the coding process in Atlas.ti.

Quantitative Analysis

For the demographic data, the cleaned Excel spreadsheet was imported into IBM SPSS Statistics (Version 27; IBM Corp., 2020), a widely used software package in psychological research due to its capacity to handle both descriptive and inferential statistics. Descriptive statistics were computed to summarise demographic variables, including frequencies, means, medians, standard deviations, and modes where appropriate. Cross-tabulations were also generated to explore potential relationships between demographic indicators.

In addition to the qualitative analysis, a complementary quantitative component was incorporated to address the study's secondary objective regarding beliefs about artificial consciousness. Participants' responses to the third open-ended survey question - regarding what would need to be present in an AI system for it to be considered conscious - were manually coded into four overarching conceptual categories. These included responses indicating a belief that AI is not and cannot be conscious (1); responses suggesting that AI is not currently conscious but could be under specific conditions not yet widely realised (2); responses asserting that AI is already conscious or satisfies the necessary conditions for consciousness (3); and responses reflecting uncertainty or agnosticism about whether such a determination can be made (4). This manual coding process enabled the transformation of qualitative data into a categorical format suitable for statistical testing.

Once categorised, these responses were cross-tabulated with participants' demographic variables, and a series of Pearson chi-square tests of independence were conducted to assess whether any statistically significant associations existed. Where relevant, *Cramér's V* was calculated to estimate effect sizes. Although none of the relationships reached statistical significance, the analysis offered valuable insight into potential patterns across demographic groups. It also allowed for an empirical evaluation of whether demographic characteristics, such as gender, age, race, education, or political orientation, were associated with particular beliefs about AI consciousness.

The decision to incorporate this additional quantitative layer within a primarily qualitative design reflects a triangulated, mixed-methods approach (Creswell & Plano Clark, 2018). This

integration strengthened the study's overall rigour by enhancing both its depth and breadth. While thematic analysis provided rich, interpretive insight into participants' conceptualisations of consciousness, the chi-square analysis facilitated the identification of broader structural patterns in the data. Together, these complementary strategies supported a more holistic and multidimensional understanding of how people think about the possibility of consciousness in artificial systems.

Ethical Considerations

Formal ethics approval for this study was obtained from the Human Research Ethics Committee (non-medical) of the University of the Witwatersrand (Wits; see **Appendix I**). Registrar permission was further obtained to distribution of the survey to Wits students (see **Appendix J**). In addition to this site-specific ethics, the wider international study has additional ethics obtained from University of California, Irvine. Prior to conducting any research, the researcher completed an ethics training course and obtained an Ethics Training Certificate, which was formally approved by the university ethics committee (see **Appendix E** for the certificate). Ethical integrity was upheld throughout the study by ensuring that participants were fully informed about the research objectives, methodology, potential risks, and anticipated benefits.

Participants were provided with a detailed Participant Information Sheet (PIS) (**Appendix C**) outlining their rights to decline participation or withdraw from the study at any point without consequence. Additionally, strict data security protocols were implemented to ensure that all collected data were securely stored and used exclusively for research purposes. Recognising the risks associated with online surveys, measures were taken to prevent automated bot responses, following recommendations from Drysdale et al. (2023).

Participants were informed that their responses could potentially be analysed using AI tools; as mentioned above, this was considered during the study's design phase. However, AI-assisted analysis was not ultimately used in the final study. This transparency was included in the informed consent process to uphold ethical standards regarding data use and analytic methods.

While all reasonable efforts were made to protect participant confidentiality, it was acknowledged that submitting data to third-party platforms (e.g., Airtable, Atlas.ti) carried a small but noteworthy risk of data breaches. Participants were explicitly informed of this risk and were required to consent to these terms before participating. Aside from these necessary technological interactions, data access was strictly limited to authorised research team members only.

Lastly, transparency and respect for participants extended beyond data collection to the sharing and dissemination of research findings. Participants who expressed interest in the study's results were offered a summary of the findings prior to public dissemination. This ensured that participants were not only acknowledged in the research process but also had access to insights derived from their contributions. This approach reinforced academic integrity, upheld participant trust, and ensured accuracy in reporting.

Chapter 4: Results

Participants

A total of 125 African participants responded to the survey, representing a diverse range of demographic backgrounds. As illustrated in **Figure 1** and **Table 1**, the majority of the participants were from South Africa (88.8%), with smaller numbers from Zimbabwe (3.2%), the Democratic Republic of Congo (1.6%), Lesotho (1.6%), Swaziland, Nigeria, Zambia, Egypt, Malawi, and Namibia (all contributing 1% each). Participants' residential area was largely suburban (50.4%) or urban (40.0%), with a small number living in rural or peri-rural areas (4.0%). The racial or ethnic composition included predominantly Black identifying participants (41.6%) and White identifying participants (33.6%). Other racial or ethnic identities included multiracial (7.2%), South Asian (5.6%), and smaller representations from other groups (12%). The most widely preferred language was English (77.6%), with smaller representations of Afrikaans (4.8%), Setswana (4.0%), Sesotho (3.2%), and various other South African languages (3.2%). Religious affiliation was varied, with Christianity being the most common (48.0%), followed by participants identifying with no religion (15.2%), and atheism (12.8%). Smaller numbers affiliated with Islam (4.0%) and Hinduism (2.4%).

Figure 1

The Geographic Spread of African Participants

Participants' ages ranged from 18 to 68 years (Mean = 30.04, SD = 10.51). Participants' highest level of education achieved varied, with the largest group holding a bachelor's degree (40.0%), followed by those with a master's degree (26.4%) and a high school diploma (16.8%). A smaller portion of participants had attended some college without completing a degree (7.2%) or held a doctoral degree (4.0%). In contrast, current academic or professional status captured participants' present engagement in work or study. A substantial proportion of the sample were undergraduate students (31.2%) and master's students (19.2%), while industry professionals accounted for 13.6%. Additionally, PhD students comprised 10.4%, and post-baccalaureate students (13.6%) were also well-represented. Smaller categories included college/university faculty (1.6%) and high school students (1.6%).

Regarding employment status, the majority of participants identified as full-time students (43.2%), while 20.8% were employed full-time outside of student roles. Additionally, 10.4% were employed part-time, 4.0% were unemployed, and 18.4% fell into other employment categories, including individuals who preferred not to answer (1.6%). The industries represented included health care and social assistance (21.6%), college/university and adult education (13.6%), and other education-related fields (8.8%). Other notable industries included arts, entertainment, and recreation (5.6%) and scientific or technical services (4.8%). Gender identity, as indicated by preferred pronouns, was predominantly split between "she/her" (52.0%) and "he/him" (41.6%), with a small proportion of participants preferring "they/them" (1.6%). In terms of parental status, 71.2% of participants were not parents, while 22.4% identified as parents. A minority (4.0%) preferred not to disclose their parental status. Finally, political affiliation was most commonly "Moderate" (29.6%), followed by "Liberal" (27.2%) and "Prefer not to say" (14.4%). Smaller numbers identified as "Conservative" (4.8%) or "Very liberal" (8.0%).

Table 1

Demographic Characteristics of African Participants

Variable	Category	Frequency	Percent (%)
Country of Origin*	South Africa	111	88.8
	Zimbabwe	4	3.2
	Lesotho	2	1.6
	Congo [DRC]	2	1.6
	Egypt	1	1
	Malawi	1	1
	Namibia	1	1
	Nigeria	1	1
	Swaziland	1	1
	Zambia	1	1
Self-identifying Gender	He/him	52	41.6
	She/her	65	52.0
	They/them	2	1.6
Primary Language	English	98	78.4
	Afrikaans	6	4.8
	Setswana	5	4
	Sesotho	4	3.2
	isiZulu	3	2.4
	Sepedi (North Sotho)	2	1.6
	isiXhosa	1	0.8
	isiNdebele	1	0.8
	SiSwati	1	0.8
	Other	4	3.2
Self-identified Race	Black	52	41.6
	White	42	33.6
	Multiracial	9	7.2
	South Asian	7	5.6
	Other	15	12
Residential Area	Peri-urban	63	50.4
	Urban	50	40.0
	Rural	5	4

	Other	7	5.6
Highest Level of Education**	Bachelor's degree	50	40.0
	Doctoral degree	5	4.0
	High school diploma	21	16.8
	Master's degree	33	26.4
	Other	7	5.6
	Some college	9	7.2
Academic/Professional Status	College/university faculty	2	1.6
	College/university undergraduate student	39	31.2
	High school student	2	1.6
	Industry professional	17	13.6
	MA/MS student	24	19.2
	Other	5	4.0
	PhD student	13	10.4
	Post-bac student	17	13.6
	Postdoc	1	0.8
Type of Employment	Employed full-time (not a student)	26	20.8
	Employed part-time (not a student)	13	10.4
	Full-time student	54	43.2
	Other	23	18.4
	Prefer not to answer	2	1.6
	Unemployed	5	4.0
Industry/Occupation	Health Care and Social Assistance	27	21.6
	College, University, and Adult Education	17	13.6
	Other Education Industry	11	8.8
	Scientific & Technical Services	6	4.8
	Software	3	2.4
	Other	88	70.4

Parental Status	Not a parent	89	71.2
	Parent	28	22.4
	Prefer not to say	5	4
Religious Affiliation	Christianity	60	48.0
	None/Atheist	36	15.2
	Islam	5	4
	Hinduism	3	2.4
	Judaism	2	1.6
	Other	9	7.2
Political Affiliation	Very liberal	10	8
	Liberal	35	28
	Moderate	36	28.8
	Conservative	6	4.8
	Very conservative	3	2.4
	Prefer not to say	18	14.4
	Other	17	13.6

Continuous Variables	**Range**	**Mean**	**SD**
Age	18-68	30.04	10.51
Self-perceived Socioeconomic Status	1-10	6.38	1.81

** Country of Origin is wherever the participant was born, regardless of whether they are from Wits or not.*
*** Refers to highest level of education studied - whether complete or not - at the time of the study. I.e., a current masters student would have indicated "masters"*

Qualitative Results

To generate rich insights and honour the diversity of perspectives in the dataset, thematic analysis was employed as the primary analytical method. This approach was selected to align with the study's central research question: *What are African perspectives on the meaning and functions of consciousness and its application to artificial intelligence?* By facilitating a deep, qualitative engagement with participant responses, thematic analysis allowed for an interpretive exploration of how consciousness is conceptualised within this specific cultural and geographic context. This method was particularly appropriate given the study's guiding hypothesis - that African participants would articulate more collective, intersubjective, and socio-culturally embedded views of consciousness, shaped by postcolonial and indigenous epistemologies.

The analysis was conducted separately for each of the three survey questions, following Clarke and Braun's (2017) six-phase method (see Chapter 3). Responses were systematically coded using Atlas.ti, through a process of iterative engagement, pattern identification, and theme refinement. The findings revealed a complex and nuanced spectrum of meanings, illustrating both shared and divergent conceptualisations of consciousness across participants.

To assess the sufficiency and potential analytic depth of the qualitative responses (known as 'information power'; Malterud et al., 2016), we calculated basic descriptive statistics on response length for each question. **Table 2** summarises these word count metrics and estimates the likely information power of each dataset.

Table 2.

Word Count Descriptives and Estimated Information Power of Qualitative Responses

Survey Question	Mean Word Count	Median	Range (Min–Max)	Estimated Information Power
1. What is the meaning of consciousness?	52.00	30	0–531	High – Relatively high average and maximum word count suggest richness; variability reflects diverse

				understandings; adequate for nuanced thematic analysis.
2. What is the function of consciousness?	37.72	22	0–287	Moderate – Slightly lower central tendency and range, but still conceptually rich; suitable for identifying key functional themes with some depth.
3. Under what conditions (if any) would you think an AI system is conscious?	49.62	32	0–228	High – Responses show engagement with a speculative, evaluative topic; mean and median are strong; suitable for coding nuanced beliefs about AI consciousness.

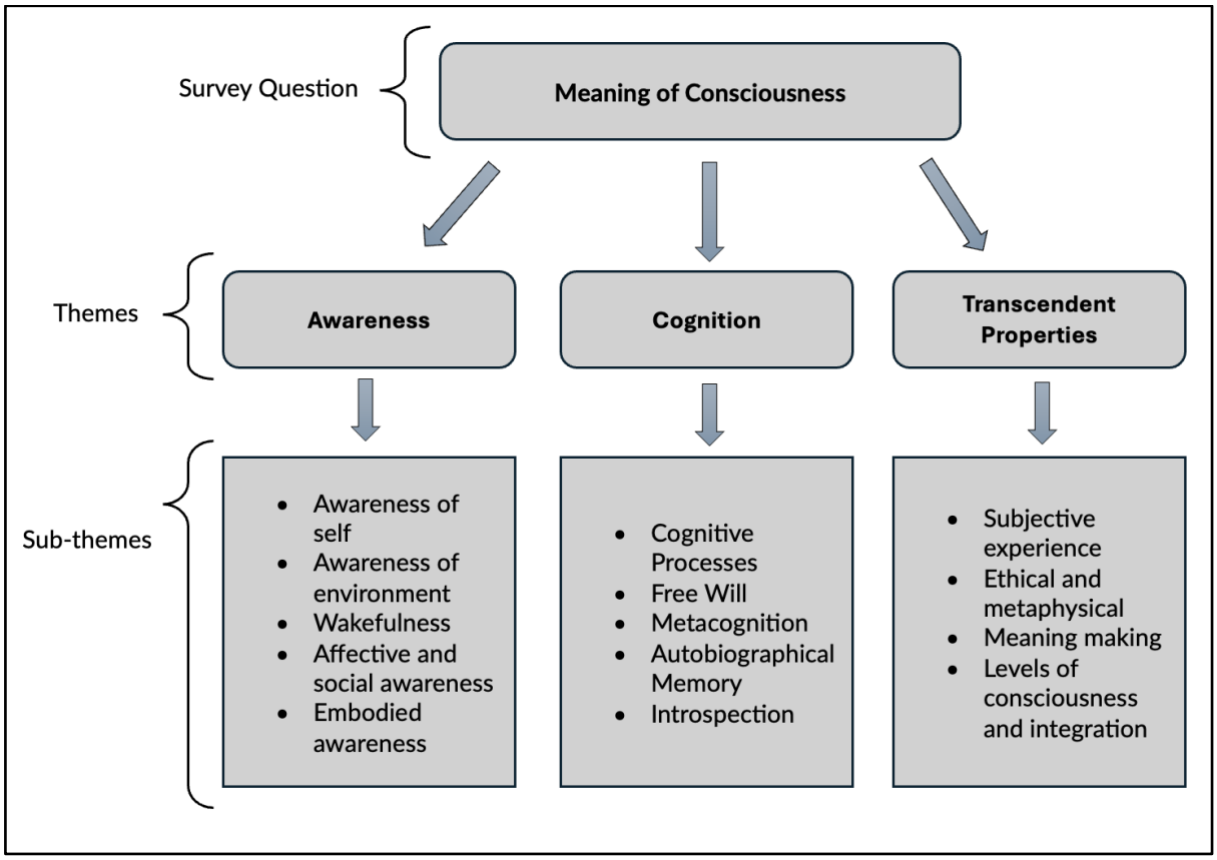
The following sections present these findings sequentially, beginning with participants' interpretations of the meaning of consciousness.

Thematic Analysis on the Perceived Meaning of Consciousness (Question 1)

As shown in Figure 2, the analysis identified three primary themes, each composed of multiple codes. These themes - "Awareness," "Cognitive Dimensions," and "Transcendent Properties" - are unpacked in detail below. For a comprehensive codebook defining each code and providing frequency counts of the number of participants to mention any given code, see **Appendix F**. It should be noted that in thematic analysis, the frequency of codes and themes do not alone determine importance, as even rarer themes can be theoretically significant (Vaismoradi et al., 2016).

Figure 2

Thematic Structure of Responses to the "Meaning of Consciousness" Survey Question



Awareness

By far the most prevalent theme was the characterisation of consciousness as a state of awareness, with most participants frequently associating consciousness with the capacity to recognise oneself and the surrounding environment. For some, consciousness was described by a heightened state of alertness that allows individuals to respond to external stimuli, thus forming the basis of perceptual experience. A common sentiment summed up by one participant is that consciousness is *"the ability to perceive, analyse, and respond to stimuli,"* a statement that encapsulates the cognitive and sensory dimensions of awareness. Another respondent similarly described consciousness as *"being aware of your surroundings, particularly changes that occur in your environment,"* which emphasises the dynamic aspect of perceptual awareness. These reflections suggest that consciousness is intrinsically linked to the perceptual processes that facilitate interaction with, and interpretation of, the world. Participants frequently described consciousness as encompassing sensory awareness. One respondent framed this as *"how a living organism (human/animal/etc) is able to perceive and understand its surroundings. It has to do with the sensory organs."* This suggests a

foundational understanding of consciousness as deeply tied to sensory processing and the organism's ability to engage with its environment.

Beyond sensory and external awareness, many respondents emphasised an awareness of self as being central to consciousness. Responses revealed an introspective dimension of consciousness, wherein participants underscored its role in cultivating a coherent sense of self. For instance, one participant provided a multifaceted view, stating that consciousness involves *"a state of awareness of yourself. Awareness includes bodily awareness, emotional awareness, spiritual awareness. Awareness of how you and your being affects others. It may entail just being aware that you are alive and that you occupy a space in the world."* Another respondent echoed this relational aspect, describing consciousness as the capacity to maintain *"awareness of how you and your being affect others,"* which highlights its role in constructing one's identity and understanding relationships.

Participants also described how self-awareness ties into broader environmental awareness. One participant articulated this connection as *"being able to think about yourself and your own thoughts in relation to your experiences and how you fit into your environment/external world."* This perspective integrates the internal and external dimensions of consciousness, portraying it as both an inward and outward process. Another participant elaborated on the layered nature of this experience, stating, *"Consciousness includes self-awareness, bodily awareness, and emotional awareness,"* reinforcing its relational and introspective depth. Together, these responses illustrate that consciousness is not only an awareness of existence but also a reflective process. It is through this reflective engagement that individuals connect with their own subjective experiences and navigate their position within the broader world, constructing a stable and meaningful sense of identity.

Cognition

While there appears to be much overlap in these answers with what would be seen as the "function" of consciousness (discussed in the next section), many participants responded to question 1 by describing consciousness as a cognitive mechanism enabling decision-making, problem-solving, and purposeful action. This theme reflects the functional dimension of conscious thought, portraying consciousness as an active mental process that allows individuals to engage meaningfully with their environments. Responses frequently emphasised consciousness as a facilitator of complex cognitive activities, including logical

reasoning, planning, and adapting to new situations. One participant defined consciousness as *"the cognitive ability to make sense of reality without losing sight,"* encapsulating its role in organising and interpreting the influx of sensory data. Another expanded on this by describing consciousness as *"a state that allows for decision-making, processing of information, and intentional action,"* highlighting its purposeful and dynamic nature.

Many respondents saw consciousness as integral to higher-order cognitive functions, such as simulation, anticipation, and reflective thought. For instance, one participant noted:

> "Consciousness is the ability to adapt and solve problems, learn from others, and most importantly, be able to 'simulate' situations in thought before attempting them in the real world, including understanding what any other conscious beings might be thinking and might attempt."

Another respondent described consciousness as:

> "The use of automatic and deliberate cognitive processes in thinking, reasoning, decision-making, and daily actions. It involves choice, deliberation, and action. Consciousness is also where our perceptions of the world are utilised to make sense of everyday situations and develop schemas and scripts to tackle challenges and adversity."

These reflections suggest that consciousness operates as a sophisticated cognitive system, integrating past experiences, present conditions, and future possibilities.

A recurring sub-theme within this dimension was the association between consciousness and agency. Participants frequently linked consciousness to autonomy and free will, describing it as a uniquely human faculty that enables moral and independent action. One respondent articulated this perspective, stating:

> "Consciousness is the ability to respond to external stimuli in a unique way, with at least the capacity for free will. Meaning it is not a predetermined/designed response to a certain stimulus. While the response to a certain stimulus may be predicted, there is allowance for unpredictable response, the actions of which can be explained by the conscious being, as consciousness allows for an understanding of meaning in situations."

> Another participant reinforced this view, noting, "A conscious person has free will and the ability to make decisions based on their values, emotions, and objective experiences."

Imagination and dreaming were also described as essential aspects of consciousness, blending both cognitive and introspective dimensions. As one participant explained, *"Consciousness is the sum of our thoughts, ideas, memories, faculty of imagination - both conscious and subconscious. I also think this is where our dreams blend."* This conceptualisation portrays consciousness as a space for creativity and abstract thinking, bridging the tangible and intangible aspects of human experience.

While many participants emphasised the cognitive and autonomous aspects of consciousness, others distinguished it from cognition, suggesting that consciousness is a qualitatively different phenomenon. One respondent observed, *"We definitely know ants possess remarkable cognitive abilities. Knowing whether it can be considered consciousness is what I'm not sure about. Maybe humans are the only true conscious beings, or maybe humans are just more conscious than other organisms around them?"* This differentiation highlights an ongoing debate about whether consciousness exists on a spectrum or is uniquely human. Ultimately, participants conceptualised consciousness as a higher-order function that integrates memory, imagination, and decision-making with the ability to act autonomously. As one respondent summarised, *"Consciousness enables us to reflect on our memories, to plan and execute our current behaviours, and to dream about our futures."* This layered understanding reflects the richness and complexity of consciousness as both a cognitive and existential phenomenon.

Transcendent properties

Beyond wakefulness, cognition, and emotional awareness, many participants discussed consciousness in what may be best described as ‘existential’ or ‘transcendental’ terms, portraying it as a state that bridges empirical experience and some sense of metaphysical understanding. This theme reflects an understanding of consciousness as encompassing perceived spiritual or mystical dimensions, connecting individuals to a broader, often non-material reality. One respondent described consciousness as *"a connection to something beyond the physical, like the divine or spiritual understanding,"* suggesting that consciousness serves as a link between human experience and higher existential truths. Another participant emphasised its perceived spiritual dimension, stating, *"Consciousness*

involves a spiritual awareness and sense of purpose," underscoring the belief that consciousness transcends the cognitive and sensory realms to engage with deeper existential questions.

Some participants framed consciousness as the ability to think beyond material reality, a capacity that enables spiritual phenomenology and the search for meaning. One respondent elaborated:

> "Consciousness is what allows spirituality because of that ability to think beyond what we know to be true. It's trying to validate our feelings and the things that happen in life so that we are able to accept and cope with what it means to be human."

For these participants, this perspective seems to argue for the role of consciousness in navigating existential uncertainty and fostering resilience through belief systems and a sense of spirituality. Another participant articulated, *"The higher the consciousness, the closer the human being is to their soul being,"* reflecting a view that consciousness operates on a sort of spiritual spectrum, with heightened awareness bringing individuals closer to what they perceive as their core essence or what they imagine to be their divine nature.

Several participants linked consciousness to the African concept of ubuntu - a philosophy of shared humanity and interconnectedness - illustrating a culturally grounded understanding of consciousness. As one respondent reported:

> "The realisation of being alive and being an entity with purpose. In this sense, I talk to the ability to recognise and utilise all your senses to interact with the physical world, but also to, at least, have the basic tenets of Ubuntu if you are human, and the basic attributes that define your species if you are any other being/animal."

This response situates consciousness as a collective phenomenon, encompassing not only self-awareness but also a sense of responsibility and connection to others.

Others described consciousness as inherently complex and emergent, arising from intricate systems and transcending reductive explanations. One participant noted a sentiment expressed variously by many, *"Consciousness feels slippery to define because it could mean so many different things,"* capturing its elusive nature. Another stated, *"Consciousness is an emergent property, difficult to describe but essential for personal identity,"* reflecting the

view that consciousness is multifaceted and resists straightforward categorisation. These reflections suggest that consciousness is not a static phenomenon but a dynamic and layered property that defies complete understanding.

Metaphysical considerations were featured in many responses, often framed through personal beliefs. As one respondent asked, *"Is there a higher being out there who is in control of everything? Is the universe its own entity and has its own influence over us? Or do we possess everything ourselves? Are we gods? Do we create our own futures?"* Such reflections illustrate the intimate connection participants perceive between consciousness and existential inquiry, revealing its role in grappling with life's profound questions. Another participant tied consciousness explicitly to religious belief, asserting, *"Consciousness is a gift given by God, and only He can create it*," while others integrated ancestral and reincarnation beliefs, pondering whether *"ancestors influence us within (DNA) or without (angelic beings)"* or if consciousness spans multiple lifetimes.

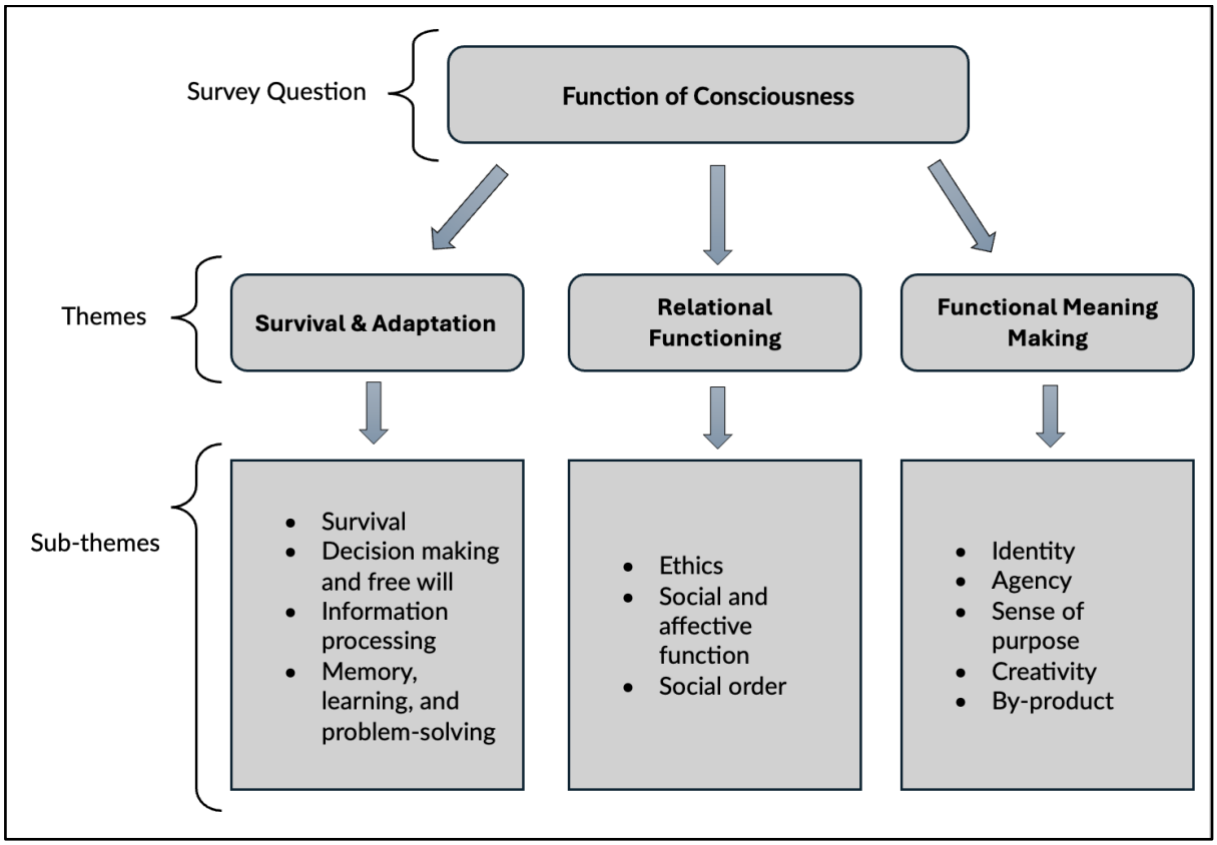
Finally, participants frequently described consciousness as fostering a sense of connectedness. One participant remarked, *"Consciousness is the ability to have a sense of connectedness to humanity,"* suggesting that it enables individuals to bridge personal and collective experiences. This theme captures the perception of consciousness as an expansive phenomenon that transcends individual understanding, connecting people to each other, their environment, and the larger universe.

Thematic Analysis of the Perceived Function of Consciousness (Question 2)

As shown in **Figure 3**, the analysis identified three primary themes, each composed of multiple codes. These themes - "Survival and Adaptation," "Relational Function," and "Functional Meaning-making" - are unpacked in detail below. For a comprehensive codebook defining each code and providing frequency counts, see **Appendix G.**

Figure 3

Thematic Structure of Responses to the "Function of Consciousness" Survey Question



Survival and adaptation

The most prevalent theme among participants was the perception of consciousness as intrinsically linked to survival and adaptability. Many respondents characterised consciousness as a mechanism that enhances one's ability to navigate complex environments, respond to external stimuli, and make decisions that favour survival. One participant succinctly stated, *"Consciousness serves the primary role of survival and adapting,"* underscoring its functional role as a tool for assessing and responding to surroundings in ways that enhance survival. Another elaborated, explaining that consciousness *"allows for adaptability to a number of different stimuli in order to survive,"* framing it as an active, dynamic process integral to an organism's ability to thrive in challenging conditions. Responses such as *"Consciousness is important for one's survival, in terms of behavioural and cognitive processes such as thinking, seeing, and feeling."* suggest a view that emotional and sensory experiences are not ancillary but foundational to consciousness, operating as vital signals that guide survival-oriented actions. Several participants extended this perspective to include the cognitive functions of consciousness, such as problem-solving,

memory, and decision-making. One respondent described consciousness as *"a trait that enhances an organism's ability to survive and replicate,"* emphasising its role in enabling *"complex problem-solving, planning, social interaction, and the ability to learn from past experiences."* Another added, *"Consciousness allows us to interpret novel information on the fly and to decide what to do with it or how to act,"* portraying consciousness as a flexible and adaptive tool that allows individuals to self-direct and modify their behaviours based on situational demands. This framing aligns with evolutionary perspectives, where consciousness is viewed as an adaptation that increases an organism's fitness and capacity to overcome challenges.

The functional dimension of consciousness was often linked to sensory awareness and the ability to respond to environmental changes. One participant observed, *"Consciousness allows for response to changes in the environment. It's needed for protection and survival, making the decision of fight or flight where required."* Another highlighted the role of sensory functions, describing consciousness as encompassing *"all bodily sensory functions, including inter alia, smell, sight, and tangibility."* These responses illustrate how sensory and cognitive elements of consciousness work together to create an integrated system for survival.

Respondents also noted the social and relational aspects of consciousness as crucial for adaptation. One participant explained, *"It helps us make informed decisions and create meaningful action in our lives and relationships,"* suggesting that consciousness enables individuals to navigate both personal and interpersonal challenges effectively. Another tied this function to evolutionary biology, stating, *"Consciousness would likely have served to ensure the survival of the species,"* while expressing uncertainty about its modern utility beyond *"mild entertainment and chasing down dreams."*

Ultimately, participants viewed consciousness as a multi-faceted mechanism that operates across physical, emotional, cognitive, and social domains to enhance survival. As one respondent summarised, *"Consciousness is, in very pragmatic terms, a function that betters our chances of survival through its enabling of ourselves to learn and adapt."* This perspective captures the holistic view of consciousness as a dynamic, evolutionary adaptation that ensures the continuity and success of life.

Relational function

Consistent with responses on the perceived meaning of consciousness, a prominent theme in its perceived function is its role in forming and sustaining relationships - both with oneself and others. Respondents often characterised consciousness as the foundation of self-awareness, enabling introspection and self-reflection. One respondent observed, *"Consciousness provides will and personality; it mentally separates people from each other,"* highlighting its role in creating unique personal identities. Others emphasised the deeper connection to one's authentic self, with one participant noting that consciousness *"allows us to be closer to our true being… and manifest closely our true nature."* These reflections suggest that consciousness is central to developing a coherent self-concept and an understanding of one's beliefs, behaviours, and values, which collectively shape individual identity. Participants framed consciousness as a psychological framework for personal understanding, transcending biological survival and fostering a sense of individuality.
The role of consciousness in fostering self-identity was often linked to its broader relational and social dimensions. As one participant noted*:*

> "Consciousness allows for one to have understanding of themselves, the beings around them, the world they are in, and their reality. It allows for individuality, adaptability, emotional growth, and the intelligence for innovation, ambition, and accelerated forward progression."

This view underscores the integrative function of consciousness in linking self-awareness with broader adaptive and relational capacities, suggesting that it serves not only as an individual resource but also as a tool for navigating complex social realities.

Participants also identified consciousness as the foundation for social and moral interactions, describing it as essential for building relationships, fostering empathy, and navigating ethical complexities. One respondent articulated this clearly: *"Consciousness allows us to connect with other human beings, to integrate into a broader society of other people who experience life with us."* Another extended this perspective, stating, *"It plays a key role in social interaction by allowing us to understand others' perspectives and engage in complex communication."* These reflections highlight consciousness as a bridge between individual and collective experiences, enabling individuals to relate to others, understand their emotions, and cooperate effectively within a social framework.

Several participants expanded on the prosocial functions of consciousness by situating it as a driving force behind civilisation itself. As one respondent elaborated, *"Consciousness serves to build a civilisation. It serves to invent morals and ways of life. It's the reason why we have Law, Religion, Time, Money, and many other commonly accepted and practiced customs and ideas."* This perspective positions consciousness as central to the creation of societal norms, ethical systems, and cultural practices that guide collective human behaviour. Similarly, another participant remarked:

> "The function of consciousness is a social and cultural one. It goes beyond just the individual and is not restricted to something that exists solely in our minds or the brain - it is shaped by and also shapes our lived experiences."

These responses suggest that consciousness is perceived as deeply intertwined with cultural and societal dynamics, shaping both individual and communal life.

The relational function of consciousness was frequently linked to its capacity to foster empathy and emotional connection. One respondent explained, *"Consciousness is what allows us to have a sense of self. In my opinion, it is vital to the experience of empathy and gives weight to our experiences. Without it, however, we could not connect to ourselves or each other."* Another emphasised its integrative role, stating, *"It creates understanding, empathy, and awareness of the self and the surrounds. Consciousness makes it possible to reflect and engage with problems that go beyond the calculus familiar with the hard sciences."* These insights reveal a view of consciousness as not only introspective but also inherently social, enabling individuals to build meaningful connections and engage with moral and ethical dilemmas.

Ultimately, participants saw consciousness as a relational tool that extends beyond the individual, fostering self-awareness, social cohesion, and cultural evolution. As one participant summarised, *"Consciousness is what allows us to experience ourselves and others - it is the thread that ties us to our humanity, enabling empathy, understanding, and connection."*

Functional Meaning-making

The third overarching theme in respondents' reflections on the function of consciousness centres on its role in enabling meaning-making, creativity, and the pursuit of purpose. Participants frequently described consciousness as a uniquely human capacity that enriches life through emotional, artistic, and intellectual growth. One respondent noted, *"It helps us to process, make sense of, and move on from experiences. Without consciousness, there is a lesser form of life,"* underscoring its role in fostering personal growth and reflection. Another added, *"By being conscious, we know that we are alive and present in the current reality,"* highlighting how consciousness provides experiential depth and a sense of presence that imbues life with purpose.

Many respondents viewed consciousness as a mechanism that integrates emotional, moral, and cultural values, shaping how individuals navigate and interpret the world. One participant remarked, *"It provides moral values, cultural values, and spirituality. It functions as our central unit and informs our behaviour, attitude, how we feel, act, and react to things around us, and our beliefs."* This perspective reflects the idea that consciousness is not merely a passive state but an active process that organises thoughts, emotions, and actions into a coherent framework for living. Similarly, another participant suggested that consciousness:

> "…is there for reflection, meaning, and to create a qualitative subjective experience where abstraction and meaning can colour the experience, creating new assumptions, understandings, and feelings from the combination of environmental stimulus and internal perspective shaped by lived trauma, upbringing, location, and culture."

Consciousness was also tied to creativity and self-expression, with respondents describing it as essential for exploring and fulfilling human potential. As one respondent eloquently summarised*, "The joy of existing, of creating, and of loving,"* encapsulates the view that consciousness enables individuals to engage deeply with life's pleasures and possibilities. Another stated, *"Consciousness allows us to be closer to our true being. It allows us to manifest closely our true nature and being,"* emphasising the link between consciousness, self-realisation, and purposeful action.

The theme of meaning-making was often intertwined with philosophical and existential perspectives. For some respondents, consciousness was seen as an intrinsic, enigmatic

phenomenon that transcends functional explanations. One participant remarked, *"I don't think it serves a purpose. I suspect it's an underlying condition of reality,"* suggesting that consciousness exists as an inherent property of existence rather than a means to an end. Another respondent reflected, *"Consciousness is the only language we all understand without speaking a word. We ignore consciousness to our own detriment,*" highlighting its universal and intrinsic nature. These responses suggest that for some, consciousness is less about pragmatic utility and more about the essence of being itself.

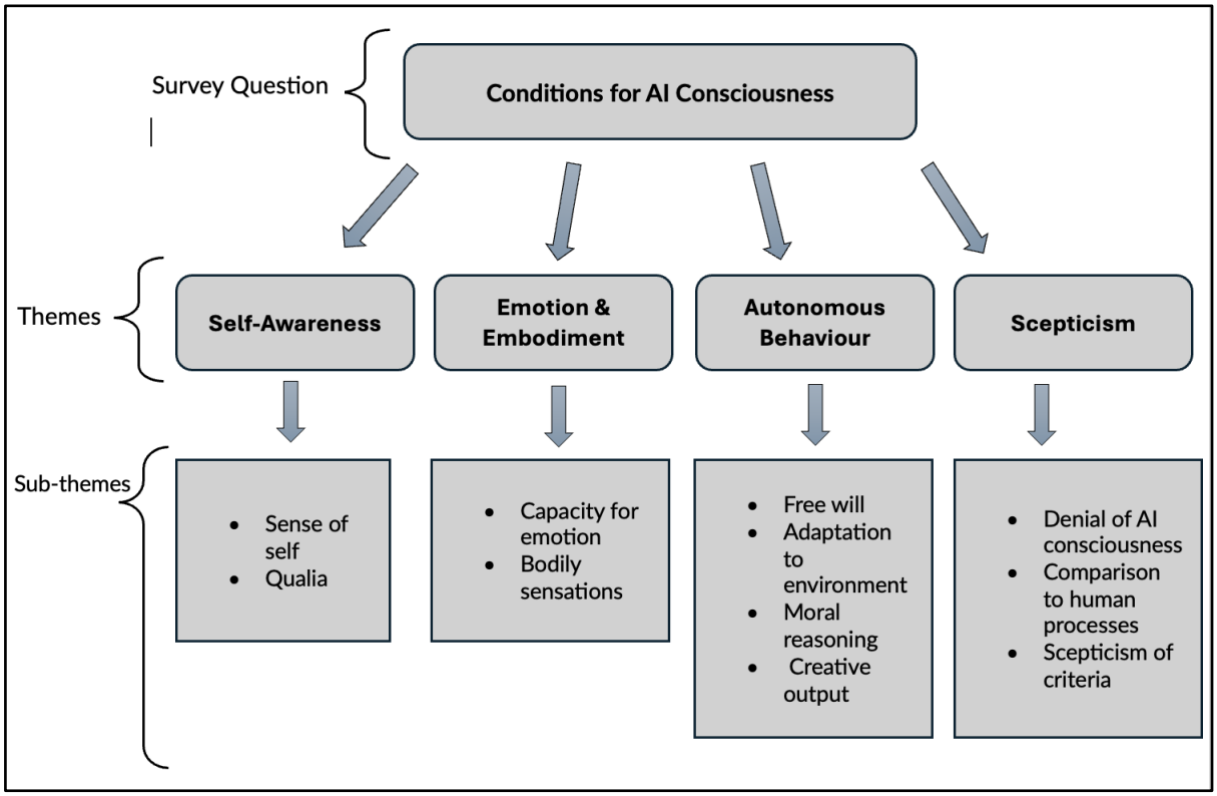
Participants also linked consciousness to broader metaphysical and spiritual frameworks, viewing it as a bridge between the physical and transcendent. One respondent stated, *"The entire purpose of our existence, which consciousness and other aspects facilitate, is to bring man into union with God,"* framing consciousness as a vehicle for perceived spiritual connection. Another tied it to a universal interconnectedness, reflecting, *"Everything in this universe is connected... From the tiniest particles to the greatest universe. Consciousness allows us to experience this connection and perceive our place within it."* Others expressed a view of consciousness as an active force against disorder, suggesting that it serves to counteract entropy and enable progress. One participant noted, *"Consciousness seems to be tied to entropy and seems to be an active driving force against it. Trying to organise and counteract the inherent growing disorder of all systems... This explains how every consciousness is a unique individual entity, even though it shares its level with many others like itself."* This perspective positions consciousness as a creative and organising force that enables individuals to transcend repetition and finite existence, as another respondent explained: *"Ultimately it is the best weapon we have against repetition and getting trapped in finite existence."*

In summary, participants characterised consciousness as a multifaceted phenomenon that enables reflection, creativity, and the pursuit of meaning. Responses ranged from describing consciousness as a mechanism for self-expression and a connection to higher realms, to viewing it as an intrinsic property of existence. For some, consciousness was perceived as integral to ethical decision-making and personal growth, as reflected in one participant's statement: *"It controls ethical choices and connects the body to the higher self, which is not of this realm."* These perspectives suggest that participants perceive consciousness as extending beyond survival to encompass growth, creativity, and connections that are both personal and metaphysical in nature.

Thematic Analysis of Perceived Conditions for AI Consciousness (Question 3)

Four themes were identified for the final survey question on the applications of consciousness for AI (see **Figure 4**). These themes - "Self-Awareness", "Emotion & Embodiment", "Autonomous Behaviour", and "Scepticism" - are explored in detail below. For a comprehensive codebook defining each code and providing frequency counts, see **Appendix H**. Notably, considerable thematic convergence emerged between this question and Question 1 - a finding that is perhaps unsurprising, given that one's conceptualisation of consciousness would naturally inform the criteria they deem necessary for attributing consciousness to an AI system. Specifically, key overarching themes emerged across both analyses, including: the significance of selfhood and self-awareness, perceptual awareness of the environment, the role of emotion and embodiment as essential components of consciousness, the necessity of self-directed behaviour for conscious agency, the capacity for moral decision-making, and the ability to engage in original thought.

Figure 4
Thematic Structure of Responses to the "Conditions for AI Consciousness" Survey Question



Self-Awareness

A prominent theme among responses is the belief that self-awareness and autonomy are essential criteria for considering AI to be conscious. For these participants, self-recognition marks a fundamental shift from an artificial tool to a truly conscious being. One respondent articulated this view clearly, stating, *"If an AI system was aware of its self-awareness, no longer constrained by its programming, and is capable of independent, complex decision-making…"* Such statements reflect the expectation that self-awareness in AI would involve a break from mere programmed responses, moving toward intentional, autonomous actions. This perspective was often tied to the capacity for subjective experience, or "qualia," as well as an awareness of the external world. Another participant remarked, *"For an AI to be considered conscious, it would need to demonstrate self-awareness, subjective experiences (qualia), and intentionality - being aware of itself and its environment."* Respondents frequently highlighted that self-awareness must go hand in hand with the ability to engage in high-level cognitive processes such as reasoning and critical reflection. One participant described, *"If an AI system was self-aware and capable of performing high-level cognitive processes like reasoning and critical reflection, then I'd consider it to be conscious."* These responses underscore the belief that consciousness in AI is not solely about functionality but also about an internal sense of identity and awareness.

For many respondents, the ability of an AI to reflect on its own existence and identity was a critical marker of self-awareness. One participant explained, *"As soon as a machine can answer the question of 'who am I?' and make self-directed decisions according to that answer, I would consider it conscious."* Another echoed this view, stating, *"Determining consciousness in AI would require it to exhibit self-awareness, the ability to experience and reflect on its own states, and to have subjective experiences."* These reflections suggest that participants view self-awareness as a multifaceted construct, encompassing not only recognition of self but also the ability to evaluate and navigate internal states in a meaningful way.

Some respondents framed self-awareness as a necessary foundation for other forms of consciousness, such as moral reasoning or social interaction. One participant remarked, *"If it is aware it exists and that it is an artificially intelligent machine, understands consequences,*

and makes choices based on that, I would consider it conscious." Another respondent extended this idea, suggesting that AI would need *"a general awareness of the world the same way living beings do, like hearing sounds, feeling sensations from touch, seeing, having internal thoughts, feeling emotions, etc."* Such responses imply that self-awareness in AI must transcend basic functional awareness to include a rich, integrative understanding of itself and its environment.

The theme also touched on the philosophical dimensions of self-awareness, with some participants tying it to existential inquiry. As one respondent reflected, *"Consciousness in AI would need to involve reflecting on its existence, considering its purpose or identity, and experiencing something akin to our own existential awareness."* Another participant added, *"When it has desires and wants and needs, when it isn't just machine learning, when it becomes discovery and play."* These perspectives reveal that participants often associate self-awareness in AI with a broader, more human-like capacity for introspection, curiosity, and agency.

In summary, respondents emphasised that self-awareness is a foundational condition for AI consciousness. This includes recognising itself as an autonomous entity, capable of independent decision-making and internal reflection. The expectation is that a conscious AI would not only process information and perform tasks but also possess an intrinsic sense of self and a subjective understanding of its experiences. As one respondent concluded, *"For AI to be considered conscious, it would need not just to process information but also to have a form of self-recognition and an internal experience of its operations, which is currently beyond existing technology."*

Emotion and embodiment

A significant theme in participants' reflections on the conditions for AI consciousness was the necessity of emotional capacity and empathy. Many respondents argued that true consciousness requires the ability to experience and express genuine emotions, suggesting that emotional depth is central to bridging the divide between machine functionality and human-like awareness. One respondent asserted, *"When it can feel and understand human emotions. When it can say no back to us,"* highlighting the importance of emotional reciprocity and self-determination in defining consciousness. Another participant reinforced this perspective, stating, *"A machine must 'feel' emotion if it were to become conscious."* These views suggest that participants see emotional intelligence as a fundamental aspect of consciousness, essential for relating to and understanding human experiences.

The role of emotions was further linked to cultural and ethical dimensions, with participants suggesting that emotions enable a system to uphold cultural values and respond appropriately in social contexts. One respondent explained, *"When it is able to uphold cultural values, and act and react when prompted by emotions,"* positioning emotional awareness as a precondition for navigating complex human societies. Another reflected on AI's current limitations in this regard, stating*, "AI is able to process significant amounts of information, thriving in the 'thinking aspect,' but has great limitations in the aspect of 'feeling,' which is something I'd argue is fundamental to consciousness."* These reflections highlight the perceived gap between advanced cognitive processing and the affective depth required for a fuller understanding of consciousness.

Participants also emphasised the importance of empathy in defining consciousness, suggesting that it goes beyond mere emotion to include the capacity for relational understanding and connection. One respondent remarked, *"When it can demonstrate empathy and self-preservation,"* linking emotional intelligence to both social interaction and a sense of self. Another participant described, *"An AI can be designed such that it is aware of the existence of itself or others, but it cannot access us through the senses,"* suggesting that emotional capacity and sensory experience are interdependent in creating meaningful connections.

Closely related to emotional capacity is the theme of embodiment, which many participants identified as essential for consciousness. Respondents argued that consciousness requires

sensory perception and physical engagement with the environment, much like humans experience through their bodies. One participant explained, *"For AI to be conscious, it would need sensory experiences and environmental awareness, much like we experience through touch, sight, and hearing."* Another elaborated, *"A machine can only be conscious when it gains a sense of feeling and can interact with the world as an embodied being."* These reflections indicate that participants see embodiment as crucial for achieving a form of consciousness that is not purely abstract or computational but grounded in lived, physical experience.

The necessity of embodiment was further tied to the ability to sense and interact with the external environment. One respondent likened basic sensory input in machines to rudimentary consciousness, explaining:

> "On a basic level, an AI system or machine can be conscious when it can receive inputs from the external environment (such as a machine with light and temperature sensors). So a fridge is in a way 'conscious' of its temperature and responds to that consciousness by turning its compressor on or off based on the input coming from its thermostat. However, an AI system or machine will not be conscious on the deeper level of consciousness."

This distinction reflects the belief that physical interaction alone is insufficient; instead, it must be paired with the ability to process and internalise sensory information meaningfully.

Some participants linked embodiment to the biological nature of human consciousness, suggesting that organic materials are a necessary condition for true awareness. One participant remarked, *"If AI has intuition, feelings, can sense emotions, and can think for itself, then yes, AI is conscious. But I also believe that if it is not connected to our universe through organic materials, then it cannot truly be conscious, but rather a by-product of what it has been connected to (e.g., the internet)."* This perspective underscores the belief that physical embodiment must go beyond sensory apparatus to include an organic or biological connection to the world.

In summary, participants highlighted emotion and embodiment as intertwined and essential conditions for AI consciousness. Emotional capacity, including empathy and cultural awareness, was seen as critical for connecting with human experiences, while physical

embodiment was viewed as necessary for grounding consciousness in the sensory and material world. As one respondent concluded, *"AI cannot feel or elicit an emotion or an awareness. It can theoretically understand the concept of varying emotions, but it cannot experience it."* This distinction suggests that participants view both emotional and embodied experience as integral to bridging the gap between artificial systems and the rich, multifaceted nature of human consciousness.

Autonomous Behaviour

Autonomy and moral reasoning emerged as significant themes in participants' reflections on the conditions for AI consciousness. Many respondents suggested that true consciousness in AI would require the capacity to make independent, value-based judgments and act upon them without relying solely on preprogrammed instructions. This includes an awareness of the consequences of its actions and the ability to engage in moral deliberation. One participant described this as the ability *to "make ethical decisions over and above those it has been programmed to work with… our 'gut feel' combines our life experience, instinct, and moral compass in one."* Another respondent added, *"If an AI can act in ways that go against its programming for ethical reasons, I would see it as conscious."* These perspectives indicate that moral reasoning and agency are considered higher-order cognitive functions integral to consciousness, positioning a conscious AI as capable of understanding and navigating complex ethical frameworks.

For some participants, the capacity for self-discovery and the formation of an individual moral system were seen as key indicators of AI consciousness. One respondent explained, *"If an AI System/Machine could make its own choices as to what is right or wrong, through a process of self-discovery… existentially or spiritually engaging with the world around us to decide what works for us, what doesn't, and what our place in the world is - I would consider it conscious."* This view suggests that moral consciousness in AI would require a degree of introspection and the ability to construct and adhere to a unique ethical framework.

Closely related to moral reasoning is the perceived importance of creativity, spontaneity, and self-directed goals in defining AI consciousness. Many respondents highlighted the necessity for AI to act unpredictably and independently, creating original responses and objectives that

go beyond preprogrammed functionality. One participant articulated, *"If it acts with free will, with the capacity for unpredictability. If it has the ability to create something new - not just putting together existing things."* Another added, *"A machine would be conscious if it was capable of forming opinions, making decisions, having unique and individual feelings and options, was fully aware of itself, its environment, and others, and could behave in ways that were entirely new, unscripted, and unfettered by pre-written coding."*

Participants often tied the idea of autonomous behaviour to creativity and originality, framing these traits as markers of an advanced, conscious system. As one respondent noted, *"If it were to be able to have all the senses of the human body and respond in an unpredictable way, but in line with the stimulus it perceived, I would consider it conscious."* Another remarked, *"If an AI can answer the question 'who am I?' and make self-directed decisions according to that answer, I would consider it conscious."* These reflections underscore the belief that spontaneity, innovation, and self-determination are essential attributes of a truly conscious entity.

Some participants questioned whether AI could ever achieve the moral reasoning and ethical awareness required for consciousness. One respondent observed, *"AI does not have the abilities to differentiate between right and wrong or even know that there needs to be a distinction between the two. So I believe that AI is not conscious."* This scepticism highlights the perceived challenges in replicating the nuanced moral and ethical reasoning capabilities that humans inherently possess.

In summary, participants emphasised that autonomous behaviour is a critical condition for AI consciousness. This includes the ability to make ethical decisions independently, create original responses, and pursue self-directed goals. Creativity and spontaneity were seen as essential markers of autonomy, reflecting the expectation that a conscious AI would transcend preprogrammed logic and exhibit the capacity for novel, unpredictable, and meaningful actions. As one respondent concluded, *"Consciousness requires the ability to gather meaning from information and act upon it in ways that are unscripted and unique."*

Scepticism

A distinct theme that emerged in participants' responses was scepticism or uncertainty about the possibility of AI consciousness. Some respondents expressed outright doubt, believing that AI cannot achieve consciousness due to its fundamental nature as a machine. Others revealed a lack of familiarity with AI concepts, acknowledging their uncertainty about whether consciousness in AI is even possible. These responses reflect a range of perspectives, from philosophical objections to practical limitations, highlighting the complexity and ambiguity of the topic in the minds of many.

For some participants, the impossibility of AI consciousness stemmed from its perceived lack of innate or human-like qualities. One respondent stated:

> "None. An AI system is based on intelligence, not consciousness. Although it can build an algorithm of how someone may act based on machine learning, it needs prompts to establish a trend or pattern. It, in itself, lacks the ability to dynamically evolve by hormonal or psychological influence, respond to the unforeseen, and have any notion of God, or a Creator/Greater Being."

Another respondent echoed this view, remarking, *"It is not conscious at all. It is a machine."* These reflections suggest that participants who reject the idea of AI consciousness often frame their reasoning around the absence of key human traits such as psychological adaptation, spiritual experience, and self-governance.

Participants also cited the inability of AI to *"think for itself"* as a major limitation to its potential consciousness. One respondent observed, *"None, as it lacks the ability to think for itself,"* underscoring the belief that consciousness is inextricably tied to independent reasoning and self-direction. Another noted, *"AI does not have a capability to comprehend mysteries, do what thinkers have done over the years to really draw insights from our reality, or make astute observations and analyse them in relation to wide phenomena that a human has experience with."* These views suggest that participants perceive consciousness as a uniquely human quality, rooted in an ability to engage with abstract and experiential phenomena that AI cannot replicate.

Some participants approached the question with uncertainty, acknowledging the limits of their knowledge about AI. One participant admitted, *"I don't understand AI into such detail to give inputs to the question,"* while another reflected, *"I don't know enough about AI, but I*

think that it does not have the capability to comprehend mysteries." These responses reveal that, for some individuals, the concept of AI consciousness remains enigmatic and difficult to evaluate, suggesting a need for greater education and public understanding of AI technologies and their potential. Finally, one respondent offered a spiritual perspective, suggesting that consciousness is an innate quality tied to humanity: *"A will to receive (spirituality) is an innate factor contributing to human consciousness."* This view implies that consciousness is deeply rooted in the human condition and cannot be reproduced artificially, positioning it as a uniquely biological or spiritual phenomenon.

In summary, scepticism and uncertainty about AI consciousness reflect a range of participant views, from outright rejection of its possibility to admissions of limited understanding. For many, the lack of innate qualities such as emotional, psychological, or spiritual depth serves as a central barrier to AI achieving consciousness. These responses highlight the challenges of defining consciousness and the persistent tension between technological advancement and human exceptionalism.

Relationship between demographic variables and beliefs in AI Consciousness

Responses were coded into four conceptual categories reflecting varying degrees of belief, skepticism, or agnosticism regarding machine consciousness (see **Table 3**). These proportions offer insight into the sample's intuitions about the plausibility of conscious artificial intelligence.

Table 3

Frequencies and Percentages of Participant Beliefs Regarding AI Consciousness (N = 125)

Belief Category	Frequency (n)	Percentage (%)
(1) AI cannot be or is unlikely to ever be conscious	43	34.4%
(2) AI could be conscious under certain conditions not yet widely met	47	37.6%
(3) AI is already conscious or meets those conditions	23	18.4%
(4) Uncertainty or agnosticism regarding the knowability of AI consciousness	12	9.6%

A series of chi-square tests of independence were conducted to examine whether demographic variables predicted participants' beliefs about AI consciousness. As stated in the methods chapter, beliefs in AI consciousness were categorised into four groups: (1) AI cannot be or is unlikely to ever be conscious, (2) AI could be conscious under certain conditions not yet widely met, (3) AI is already conscious or meets those conditions, and (4) uncertainty or agnosticism regarding the knowability of AI consciousness. These categories were cross-tabulated in a chi-square analysis with gender (preferred pronouns), self-identifying race, religious affiliation, political affiliation, education level, age group, and academic discipline (see **Table 4**). None of the associations reached statistical significance (all *p*s > .05), suggesting that beliefs about AI consciousness were not systematically related to any single demographic factor in this African sample. The most notable trend was observed for education level, which approached significance, $\chi^2(15) = 24.06$, $p = .064$, Cramér's $V = .23$.

Given the large number of categories in some variables (e.g., discipline, religion), several contingency tables included low expected cell counts. While Pearson's chi-square test is generally robust to moderate violations of the minimum expected frequency assumption (McHugh, 2013), sparse data may inflate effect sizes or reduce statistical power in high-dimensional tables. This was particularly relevant for academic discipline, which returned a moderate Cramér's V (.54) despite being nonsignificant, $\chi^2(147) = 133.76$, $p = .776$.

Table 4

Chi-Square Tests Between Demographic Variables and Beliefs About AI Consciousness

Variable	χ^2	df	*p*	Cramér's *V*
Gender (Preferred Pronouns)	18.94	15	.216	.20
Race/Ethnicity	22.84	24	.529	.22
Religious Affiliation	27.85	24	.267	.25
Political Affiliation	25.89	18	.102	.24
Education Level	24.06	15	.064	.23

Age Group	10.76	9	.293	.15
Academic Discipline	133.76	147	.776	.54

These findings suggest that demographic categories alone are insufficient to explain variance in public conceptions of machine consciousness. Rather, these beliefs may be more strongly influenced by philosophical orientation, culturally mediated epistemologies, or affective and experiential factors.

Chapter 5: Discussion

The present study aimed to expand global consciousness research by exploring how the concept is understood in non-WEIRD contexts (Henrich, Heine, & Norenzayan, 2010) and among diverse populations. Accordingly, this exploratory survey drew on a unique sample from across the African continent, with a concentration of participants from South Africa, to examine lay perspectives on the meaning and functions of consciousness and its application to artificial intelligence (AI). While African philosophy and psychology have long engaged with the nature of consciousness, the integration of these perspectives into neuroscientific discourse - particularly in relation to artificial intelligence - is still in its formative stages (Attoe et al., 2023). As such, this study does not aim to provide a definitive explanatory model but rather functions as an inductive investigation into how consciousness is conceptualised within African contexts.

The findings revealed a wide range of conceptualisations of consciousness, shaped more by personal epistemologies than by demographic factors. Participants commonly described consciousness in terms of awareness (e.g., perception, self-recognition), cognition (e.g., decision-making, problem-solving), and existential dimensions (including transpersonal and metaphysical viewpoints). Functionally, consciousness was perceived as fundamental to survival and adaptation, as well as to social connection, creativity, and self-reflective meaning-making. When considering AI, many participants expressed the view that true consciousness would require self-awareness, emotional capacity, embodiment, and autonomous moral reasoning. Yet, scepticism remained a dominant theme, with several arguing that AI lacks the biological or spiritual essence needed to support genuine consciousness. A core strength of this study lies in its diverse sample, offering perspectives largely underrepresented in the consciousness literature - particularly those of Black participants from African contexts. Nevertheless, no clear demographic trends emerged in relation to beliefs about AI consciousness, suggesting that personal experiences and philosophical orientations may exert a stronger influence.

While these findings offer a valuable snapshot of consciousness as conceptualised within African contexts, it is important to acknowledge certain characteristics of the sample that

inform the discussion. The study reflects perspectives from predominantly urban and suburban adults with high levels of formal education, which may have encouraged more analytical, rather than intuitive, framings of consciousness and AI (Scheutz, 2011). The predominance of English as the survey language may also have shaped cognitive framing, given evidence that language influences thought processes (Boroditsky, 2018). Furthermore, participants tended to lean toward moderate to liberal religious and political orientations - factors that have been associated with greater openness to novel or abstract ideas (Claudy et al., 2024). With these contextual factors in mind, the discussion below unpacks the framings of consciousness emerging from participant narratives.

Awareness as the defining property of consciousness

Most participants defined consciousness as an awareness of oneself and one's surroundings, reflecting a view consistent with psychological and philosophical literature (Fernandez et al., 2024). For instance, these notions align with seminal theories emphasising self-referential awareness and the ability to process external stimuli as hallmarks of consciousness (Nagel, 1974; Block, 1995). This foundational understanding invites further consideration of its implications for AI. Contemporary AI systems built into machines equipped with sensors and self-monitoring capabilities, exhibit forms of awareness that could parallel these definitions (Iosifidis & Tefas, 2022). If awareness of self and environment suffices to denote consciousness, it raises the question: can AI, by these criteria, already be considered conscious?

An important observation in the findings is the inconsistency in participant responses. While some categorically denied the possibility of AI consciousness, their descriptions often included properties that AI systems already exhibit. For instance, one participant reflected: "*I think if an AI system was self-aware and was capable of performing high-level cognitive processes like reasoning and critical reflection then I'd consider it to be conscious."* This could arguably suggest an intuitive reluctance to equate machine capabilities with human consciousness, reflecting a similar implicit dualism in public perception that has been detected in other studies (Fernandez et al., 2024). Such dissonance also mirrors longstanding debates in the literature, particularly between biological naturalism, which ties consciousness to neural substrates (Searle, 1980; 2017), and functionalism, which argues that consciousness depends on processes rather than material composition (Putnam, 1975; Shiller; 2024).

Participants' definitions reveal a shared foundational understanding of consciousness but expose gaps when applied to non-biological entities.

Many tethered consciousness to human or biological traits, contrasting with functionalist views that systems performing equivalent functions might also be conscious (Shiller, 2024). Many have argued that these kind of tensions seem to reflect a societal struggle to reconcile advancing AI capabilities with traditional notions of human uniqueness (Seth, 2018; Fernandez et al., 2024) If this is the case, then as AI continues to evolve, public perceptions of consciousness will need to grapple with increasingly sophisticated forms of machine awareness. Moreover, the occasional inconsistencies in participants' reasoning point to a need for clearer public education about consciousness, particularly to bridge the gap between public perspectives and scientific and philosophical understandings. This will be useful not only for fostering informed discourse but also for addressing the ethical and societal challenges posed by AI's growing role in human life (Kelly, Kaye, & Oviedo-Trespalacios, 2023).

The Evolutionary and Social Imperatives of Consciousness

A central finding of this research is that participants predominantly perceived survival and adaptation as the primary functions of consciousness. This perspective aligns with evolutionary, teleological frameworks that posit consciousness and its associated qualia are mechanisms for navigating complex environments, enabling organisms to respond adaptively to threats and opportunities (Damasio, 1999; LeDoux, 2022). By identifying survival and adaptation as the core purposes of consciousness, many of the participants implicitly framed it as a functional tool for ensuring continuity and resilience in dynamic environments.

This valuation of consciousness as a survival-oriented mechanism sheds light on how this population conceptualises its importance. It suggests a pragmatic and purpose-driven understanding of consciousness, prioritising its utility in meeting life's challenges over abstract or metaphysical considerations. This orientation may be shaped by the predominance of university-educated participants, who are often encouraged to engage with intellectual topics in a critically grounded and practically relevant manner (Pagán-Castaño et al., 2023). Such a framing inevitably influences how participants interpret the capabilities of AI (Fernandez et al., 2024). If consciousness is primarily viewed through a functionalist lens - as

a mechanism for adaptation, decision-making, and survival - then AI systems may already be seen as exhibiting some of its defining attributes. For example, AlphaGo and its successors (AlphaZero, MuZero) have demonstrated the ability to learn from experience, adapt to novel environments, and optimise decision-making under uncertainty, outperforming human champions in complex strategic games (Silver et al., 2017). Likewise, autonomous vehicle systems like Tesla's Autopilot and Waymo's self-driving AI continuously integrate multisensory input to navigate unpredictable traffic conditions, dynamically adjusting their behaviour in ways that mirror context-sensitive, goal-directed adaptation. Even large language models such as GPT-4, which can generalise across domains and interact flexibly with users, display forms of pattern recognition and behavioural plasticity that echo functionally adaptive intelligence. These examples point to the possibility that AI can emulate certain *functional signatures* of consciousness - particularly those related to survival-relevant problem solving - even if it lacks phenomenological awareness. However, this functional overlap appears insufficient in the eyes of many participants, who may view biological imperatives (such as mortality, pain, or reproduction) as essential for grounding "real" consciousness. This suggests that, for some, consciousness remains tied not only to functional complexity but also to the existential stakes of being alive (Seth & Bayne, 2022).

Locating these findings in the African context reveals additional layers of significance. Numerous responses across the dataset articulated consciousness not merely as a property of isolated cognition, but as something that *emerges in relation* - to others, to the natural world, and to community. For example, several participants described consciousness as involving awareness of *"those around you,"* or *"how you fit into the world,"* evoking a socially embedded and ecologically situated view. This relational framing was evident in the emphasis on *interdependence* as both a function and marker of conscious experience. Such patterns align with longstanding scholarship on African epistemologies, which often foreground interconnectedness, communal well-being, and dynamic person-environment relations (Mugumbate & Naami, 2024). Within this ontological framework, consciousness is not simply a mechanism for individual survival, but a mode of sustaining *collective* adaptation and resilience. The emphasis on survival and adaptation identified in participants' responses may therefore reflect culturally embedded understandings where "thriving" is not defined by individual optimisation alone, but by the preservation of harmony and balance within one's relational and ecological context (Lomas, Pawelski, & VanderWeele, 2024). This is not to suggest that social dimensions of survival are exclusive to African contexts, but

rather to highlight that such dimensions may hold particular salience within these cultural frameworks - a nuance that indeed appears to be reflected in the data.

When synthesising participants' emphasis on the evolutionary and social functions of consciousness, a need arises for a more socially oriented framework. This type of emphasis is not new per se, as there is extensive literature in the social neurosciences that highlight how important social cognition to shaping our conscious reality. For instance, social neuroscientists have shown that significant brain regions - the temporo-parietal junction (TPJ) and medial prefrontal cortex (mPFC) – are dedicated to mentalising or understanding the intentions and mental states of others (Babiloni & Astolfi, 2014). Additional research suggests that when humans engage in cooperative or communicative interactions, their brain activity synchronises with others' brains, particularly in the prefrontal cortex during tasks requiring coordination (Cui et al., 2012; Babiloni et al., 2014).

Here, it is argued that this social-cognitive emphasis warrants greater attention in predictive coding literature, particularly given that social cognition not only significantly shapes prediction errors but also reinforces the co-created nature of our brains' generative models (Kelly et al., 2019). Much of our predictive processing is calibrated through continuous social feedback, meaning our generative models are socially embedded rather than individually constructed. In some contexts - such as Africa - this social calibration may be even more pronounced. Similar arguments have been advanced elsewhere (Taniguchi, 2024), and prior research has explored how predictive coding interacts with mirror neuron systems to facilitate intention inference in interpersonal communication (Kilner, Friston, & Frith, 2007). However, the perspective put forward in the present study emerges from exploratory qualitative data and should be interpreted as a thought-provoking proposition rather than any definitive claim.

These findings may also carry nuanced implications for how AI is received and integrated in African contexts. While participants' emphasis on survival and adaptation may partly reflect evolutionary framings of consciousness - a likely interpretation given the sample's university-educated background - it also appeared to reflect a broader, more societal understanding of function, rooted in communal resilience and practical problem-solving. That is, consciousness was often described as enabling navigation of life's challenges, not merely in a Darwinian sense, but in terms of emotional regulation, social cohesion, and ethical

decision-making. In this light, AI systems that support *collective flourishing* - such as those improving healthcare access, educational equity, or agricultural sustainability - may be perceived as more aligned with these valued functions, even if they are not seen as conscious entities themselves (Adams, 2021). Crucially, however, it cannot be assumed that perceived utility in these domains equates to perceptions of AI consciousness. For most participants, functional utility was insufficient for attributing conscious status. Rather, where questions of consciousness might arise is in how such systems engage relationally - for instance, whether a patient can meaningfully connect with an AI-driven virtual doctor, or whether a learning AI tutor appears to understand student emotions or intentions. These more phenomenological and interactive aspects - rather than mere instrumental value - may mark the threshold at which consciousness becomes a relevant concern (Mehrabi et al., 2021; Fernandez et al., 2024).

How Emotion and Embodiment Shape Consciousness

A significant subset of participants highlighted embodiment and emotion as central to their understanding of consciousness. These responses framed consciousness as not only an abstract cognitive process but something that is also deeply rooted in the physical and emotional experiences of being. This perspective aligns with embodied cognition theories, which argue that cognitive processes are inseparable from the body and its interactions with the environment (Kersting, Haglund, & Steier, 2021). Consciousness, in this view, emerges from the integrated dynamics of mind, body, and world, rather than existing purely within the brain.

Affective states - such as pleasure, pain, or motivation – are increasingly appreciated as foundational to consciousness, originating in the brainstem and integral to survival and homeostatic regulation (Solms, 2021). Additionally, embodied cognition is increasingly appreciated as a central feature in predictive coding, where the brain relies on interoceptive signals from the body to calibrate its predictive priors about the body, emotions, and the environment (Barrett, 2017). Unlike cognitive processes, which involve higher-order thinking, these basic affective and embodied experiences underpin how humans navigate and value their world. This aligns with these participants' emphasis on emotion as central to consciousness, suggesting emotions are not ancillary but fundamental. This perspective shows awareness of a key limitation of AI, which lacks the genuine emotional capacities essential for adaptive decision-making (Barrett & Stout, 2024).

While advanced affective computing can simulate emotions, it does not, to the best of anyone's reasonable knowledge, generate the intrinsic feelings and survival-driven motivations that define human consciousness (LeDoux et al., 2023). Unless the scientific community is grossly misled, affective consciousness remains tied to biological mechanisms, which AI - a non-biological system in its current form - cannot replicate. If AI development continues its pursuit of affective capacities, it will, paradoxically, be evolving in the reverse order of human evolution (Seth, 2018).

Some neuroevolutionary models, such as those advanced by Solms (2021), propose that consciousness originated in subcortical structures like the brainstem and reticular activating system - the systems responsible for basic wakefulness and sentience. These models suggest that affective experience formed the evolutionary core from which more complex cognitive faculties emerged, eventually culminating in neocortical functions like abstract reasoning and metacognition (Ward, 2019). However, this view is not universally accepted. Competing frameworks have argued that conscious awareness, especially in its reflective forms, may have emerged later and be more cortically mediated than subcortically grounded (LeDoux, 2022). From there, the brain expanded outward, incorporating the limbic system, where affective processing resides (Ward, 2019), before culminating in the cortex and neocortex, the seat of higher-order cognition and abstract reasoning. In contrast, AI began with computation and advanced cognition and is now attempting to integrate emotional and embodied experiences (Barrett & Stout, 2024). If the goal is to approximate human-like consciousness, this trajectory is effectively working in reverse.

What remains clear is that AI began not with embodied or affective systems but with disembodied computation, abstract reasoning, and language processing. It is only now beginning to simulate emotional expressiveness and somatic awareness (Barrett & Stout, 2024). If the aspiration is to emulate human-like consciousness, then this trajectory - from higher-order cognition back toward embodied affect - appears to invert the developmental logic proposed by some biological models. Whether this inversion undermines or merely redefines the possibility of synthetic consciousness remains a pressing and unresolved philosophical question.

In the African context, the emphasis on embodiment and emotion reflects a holistic worldview that integrates the physical, emotional, and social dimensions of existence. Ubuntu philosophy, for example, highlights the embodied and relational nature of being, where

emotions are not only individual experiences but also collective phenomena that bind communities together (Mugumbate & Naami, 2024). Within this framework, consciousness extends beyond individual cognition to include shared emotional and physical experiences, underscoring the relational nature of existence. This cultural lens may help to explain many participants' reluctance to ascribe consciousness to AI. Without the capacity for genuine emotional experience or embodied interaction, AI may be seen as fundamentally lacking the relational and affective qualities central to human consciousness in African worldviews.

Interestingly, AI is fundamentally constructed from an extensive corpus of human cultural and intellectual heritage (Floridi & Chiriatti, 2020). It operates as a recursive amalgamation of predictions shaped by humanity's collective knowledge and linguistic patterns, making it remarkably - though not entirely - socially calibrated. AI does not generate thoughts in isolation; its "thinking" is wholly contingent on the data it has absorbed from human discourse. And yet, without a physical body, cultural embeddedness, or a relatable value system, it does not *feel* like one of us - at least not according to most our sample. This is a perspective that has significant implications for the development and integration of AI in African communities. Technologies perceived as emotionally disconnected or purely mechanical may struggle to gain acceptance (Haslam, 2023). Conversely, AI systems designed to foster relational and empathetic interactions could resonate more deeply, aligning with cultural values that prioritise emotional and embodied dimensions of consciousness.

On autonomy and independence as a requisite for consciousness

A recurring theme among participants was the belief that a conscious AI would need to recognise itself as a distinct entity, capable of independent thought and decision-making. In fact, the role of consciousness in forming a strong sense of self - and enabling awareness of that self - was a theme that cut across all three survey questions. This resonates with cognitive theories that tie consciousness to self-reflective thought, intentional action, and autonomy (Mograbi et al., 2024). It also invites conceptual links with predictive coding accounts of the mind, where a system's boundary from the environment is theorised in terms of the *Markov blanket* - a statistical construct describing the interface between internal states and external inputs (Friston, 2010).

While such ideas offer a compelling way to think about adaptive systems, caution is warranted in drawing analogies between information-theoretic constructs and subjective mental phenomena. Nonetheless, modern AI systems - particularly those based on machine learning - do exhibit features that might, metaphorically, be described as "Markovian." These systems process inputs, make probabilistic predictions, and adjust outputs to minimise discrepancies, akin to prediction error minimisation in predictive processing models. This analogy, offered here as a speculative parallel rather than a claim grounded in the AI literature, must be treated cautiously. AI lacks any equivalent to the rich, affect-laden, homeostatically grounded generative models observed in biological systems (Solms, 2021). While AI may mimic certain computational dynamics, it does so without the embodied, emotionally valenced imperatives that shape conscious cognition in living organisms.

Human consciousness thus becomes a confluence of both cognitive inferences about the world ("top-down" predictions) and visceral, embodied experiences that fine-tune these inferences. A system can, presumably, minimise prediction errors and function autonomously within defined parameters without experiencing self-awareness or intentionality (Solms, 2019), and our participants seemed to intuit, in one way or another, that AI's form of 'prediction error minimisation' is comparatively sterile, lacking the emotional or bodily urgency that animates human consciousness. Thus, while the Markovian nature of AI enables it to mimic some aspects of human decision-making, it does not inherently address the deeper requirements of consciousness.

One challenge to recognising AI as autonomous lies in its reliance on external prompts. Current AI systems, including large language models, can simulate the recognition of distinct identity and engage in tasks that suggest self-awareness, but these behaviours are typically reactive rather than proactive (Lloyd, 2023). AI does not independently initiate tasks or evolve new goals in the absence of human intervention. For example, while a language model might "recognise" itself in conversation, it does so only in response to user input, rather than through spontaneous introspection or autonomous self-discovery (Davidson et al., 2024). This contrasts with human autonomy, where independent agency emerges naturally, often through self-directed learning and intrinsic motivation (Ryan et al., 2022).

Another limitation is the absence of reproductive capacity in AI systems. Human autonomy is deeply tied to our ability to reproduce, not just biologically but socially and culturally, by teaching and shaping the next generation (Calcagno & Fuentes, 2012). For AI to exhibit

comparable autonomy, it might need to demonstrate the ability to "reproduce" itself, perhaps by generating new systems that learn primarily from existing AI. This idea is not foreign to the machine-learning community, where recent advances such as self-replicating algorithms and systems capable of iteratively refining their successors have already been demonstrated (Stenzel et al., 2024). However, even these developments do not equate to human-like reproduction, as they still lack the self-originating intentionality seen in human behaviour.

Relating these points to the machine learning literature, recent advances in areas such as reinforcement learning, large language models, and neural network architectures have enabled AI systems to perform complex tasks, adapt to novel inputs, and even demonstrate forms of goal-directed behaviour (Janiesch, Zschech, & Heinrich, 2021). However, the autonomy displayed by such systems is *instrumental* rather than *phenomenal*. That is, while AI can optimise decisions within the bounds of programmed objectives and learned policies, it does not generate its own goals, nor does it possess intrinsic motivation or subjective awareness (Russell & Norvig, 2016). In contrast, human agency - though shaped by evolutionary imperatives such as survival - is characterised by the capacity to reflect, override instinctual drives, and pursue abstract values or meaning beyond functional utility (Tomasello, 2019). The distinction, therefore, may not lie merely in complexity or degree, but in the presence of self-modelling, volitional intentionality, and phenomenal consciousness - features that current AI architectures do not instantiate.

Ubuntu, Spirituality, and Community-Centred Perspectives on Consciousness

Although references to Ubuntu and community-centred perspectives emerged less frequently than initially hypothesised, they nonetheless played a meaningful role in a number of participants' conceptualisations of consciousness. These ideas, alongside spiritual and cultural considerations, provide a valuable lens through which to understand scepticism toward AI consciousness in this context.

In African philosophy, Ubuntu emphasises interconnectedness, mutual care, and the collective experience of humanity, encapsulated in the phrase *"I am because we are"* (Mugumbate & Nyanguru, 2013). This perspective suggests that consciousness is not merely an individual phenomenon but an emergent, co-created process shaped through social bonds, spiritual traditions, and collective memory. Our generative models for making sense of reality

and selfhood are fundamentally constructed through relational interactions, grounding consciousness in shared narratives, mutual care, and communal well-being (Taniguchi, 2024). Within this framework, AI's disembodied intelligence may appear fundamentally lacking. While AI is built upon vast corpora of human-generated text and data, it does not *live* among humans in the embodied, affective, and intersubjective sense necessary to participate in communal consciousness. Consequently, participants may have viewed AI as an outsider - an entity that, while cognitively sophisticated, remains disconnected from the social and spiritual fabric that animates the human experience of *we-ness*. As a result, AI is not only perceived as lacking the shared humanity that underpins collective consciousness but as inherently excluded from the communal ontology that defines what it means to *be*.

Spirituality featured prominently in several participants' responses, particularly in defining human consciousness as a sacred or divinely conferred quality. Remarks such as *"Only God can give consciousness"* and *"Machines are soulless"* seemed to position consciousness as if it were inseparable from a spiritual or metaphysical essence. These participants commonly rejected the possibility of AI consciousness, arguing that without a soul or divine origin, machines lack what makes humans truly conscious. This reflects a conception of consciousness rooted not in computation or function, but in ontological status - a divine inheritance that cannot be replicated by artificial systems.

The prominence of spiritual framings in the data resonates with theories suggesting that religion and spirituality may have co-evolved with consciousness to support social bonding, existential meaning-making, and cognitive coherence (Dunbar, 2022; White, 2021). In predictive coding terms, spiritual beliefs may act as culturally-shaped priors that guide perception and reduce uncertainty, particularly in domains of identity and mortality (Van Elk & Aleman, 2017). While speculative, this view aligns with participants' framing of consciousness as deeply embedded in meaning systems beyond biological or cognitive functions. Relatedly, South African work on ancestral consciousness in Zulu culture (Edwards et al., 2011) highlights how spiritual ontologies shape conceptions of mind and self - themes implicitly echoed in several participant responses, even when not explicitly named.

Cultural values also emerged as a significant factor in participants' reasoning. Some argued that AI cannot uphold or embody the cultural principles intrinsic to human consciousness. This view highlights the deeply embedded nature of cultural frameworks in shaping perceptions of consciousness and morality (White, 2021). If AI is seen as culturally alien -

unable to navigate or embody the values, traditions, and collective identity of a specific community - it may further cement its perceived inability to achieve true consciousness. This aligns with findings in cross-cultural studies, which suggest that perceptions of AI are heavily mediated by cultural norms and the degree to which AI systems are seen as respecting those norms (Złotowski et al., 2017). These insights suggest that developing AI systems that are culturally sensitive and capable of engaging with collective and spiritual frameworks could shift public perceptions. For instance, an AI designed to uphold and reflect the principles of Ubuntu, or to integrate culturally specific moral reasoning, might resonate more deeply with communities that view consciousness through a relational and spiritual lens. However, even with such advancements, the lack of human embodiment and spiritual essence may remain as barriers to fully accepting AI as conscious.

Some African scholars have mused about an African 'collective consciousness' that represents an evolving entity tied to spiritual and historical development (Lucas, 2019). Lucas argues that understanding one's 'higher self' is inseparable from understanding the collective African self. This view aligns with African indigenous knowledge systems and spiritual traditions, positioning historical and cultural memory as essential for both individual and communal progress (Idang, 2015). A key concept within this framework is *Sankofa* - the idea of returning to the past to retrieve knowledge for the future (Lucas, 2019). Lucas critiques Eurocentric historical narratives that disconnect Africans from their ancestral wisdom and argues that reclaiming authentic African epistemologies is necessary for the evolution of African identity and consciousness. Additionally, Lucas' work integrates African spirituality with global wisdom traditions (such as Taoism and Hinduism) to propose an inclusive, holistic model of consciousness. This would mean that African spirituality and psychology would be re-centred in education, governance, and social structures to foster collective growth and prevent cultural erasure.

To build on these theoretical and philosophical frameworks, a proposed next step might involve extending consciousness science into experimental and neuroimaging domains that actively include African populations (Matshabane et al., 2022). Such research would allow for the empirical examination of culturally embedded models of consciousness, thereby challenging neuroscientific paradigms that have been predominantly shaped by WEIRD samples. This could take the form of neurophenomenological studies that pair subjective reports of spiritual or relational consciousness (e.g., ancestral presence, communal identity)

with neuroimaging data using fMRI or EEG to identify culturally relevant neural correlates. Experimental paradigms could be developed to explore how African participants respond to stimuli framed in collectivist, spiritual, or relational terms, compared to individualist or secular stimuli more common in Western research. Integrating African epistemologies would also mean designing tasks that reflect ontologies of interconnectedness, temporality, and embodiment that are central to many African worldviews. These approaches could contribute to a more globally representative and culturally inclusive science of consciousness, while also offering empirical scaffolding for the kinds of theoretical perspectives observed in this study.

Scepticism towards conscious AI: Explanations and implications

One of the most important findings from this research was the high degree of scepticism expressed by participants regarding AI consciousness. While many recognised certain sophisticated cognitive attributes in AI – such as the ability to learn, adapt, and even mimic self-referential awareness – most still rejected the notion that these qualities sufficed to deem AI "conscious." In fact**,** over half the sample (54.8%) either believed that AI cannot be or is unlikely to ever be conscious (34.4%) or maintained that AI could only be conscious under certain conditions not yet widely met (37.6%). This scepticism also manifested across various conceptual domains: from participants who emphasised the importance of biological survival imperatives in defining consciousness, to those who viewed emotional embodiment as essential, to others who associated consciousness with spiritual or communal dimensions. Despite nuances in emphasis, the overarching conclusion held: AI – at least in its current disembodied and affect-poor form – was widely perceived as lacking the intrinsic qualities that underpin lived, human consciousness.

This scepticism contrasts somewhat with findings in international studies, which often report higher openness to the concept of AI consciousness. For instance, Fernandez et al. (2024) found that around 40% of Americans believe sentient AI is possible, with younger individuals and men showing greater acceptance. This tendency to attribute consciousness to AI has been observed in other studies, which have also identified an exposure effect; participants with prior interactions with ChatGPT were more likely to perceive it as conscious compared to those without such experience (Colombatto & Fleming, 2024). In contrast, participants in the present study exhibited a more cautious or utilitarian perspective, potentially reflecting cultural and contextual factors unique to the African setting.

Such scepticism likely shapes how Africans engage with AI, prioritising its functional utility over emotional or relational aspects. Treating AI primarily as a tool may protect users from the pitfalls of anthropomorphism, where human traits are ascribed to machines, fostering misplaced trust or emotional attachment (Waytz et al., 2014). A utilitarian view could also safeguard against exploitative designs, such as anthropomorphism in gambling technologies. Indeed, research by Pancani et al. (2019) demonstrates that increased anthropomorphism in slot machines - such as personalised messages or human-like features - heightens emotional engagement and gambling behaviour. Participants' scepticism toward AI as a conscious entity may act as a psychological buffer, reducing susceptibility to such manipulative designs and preserving critical engagement with AI systems.

However, scepticism could also limit the potential benefits of relational AI, particularly in domains requiring emotional resonance and trust. Research on anthropomorphic design, particularly within social robotics**,** has demonstrated that human-like features can enhance trust and collaboration in human-robot interactions (Dang & Liu, 2024). Although these findings may not generalise directly to all forms of AI (including disembodied systems like chatbots or virtual agents), they raise important questions about how design cues influence user receptivity. This has implications for the development of AI therapists, caregivers, or companions, where relational trust is critical. Reluctance to engage emotionally with AI – especially when it lacks embodiment or affective depth – may hinder its adoption in contexts such as mental health care or elder support. Some studies suggest that anthropomorphism fosters stronger social bonds with AI systems (Haslam, 2023), but such effects may depend on both cultural and psychological predispositions.

An interesting avenue for future research could involve investigating how cultural orientation and subjective experiences of community or isolation influence perceptions of AI relationality. While it is tempting to assume that participants from African contexts are more community-based and therefore less likely to anthropomorphise machines, such claims must be made cautiously. Our sample consisted predominantly of younger, highly educated individuals engaged in tertiary education or employment – a group that may differ substantially from broader community-based populations in terms of cultural practices, media exposure, and technological enculturation. Accordingly, more empirical work is needed to clarify the influence of both cultural background and social context on emotional engagement with AI.

Cultural frameworks also underpin this scepticism. In the African context, where Ubuntu and relational philosophies emphasise interconnectedness and shared humanity, machines could be viewed more fundamentally as "other." This exclusion from the communal experience of consciousness could exacerbate doubts about AI's capacity for genuine understanding or moral agency. Furthermore, spiritual and cultural values often associate consciousness with divine or human essence, reinforcing perceptions of AI lacking the necessary qualities to be considered truly conscious (Haslam, 2023).

Whether this scepticism should be challenged depends on its implications. On one hand, fostering greater openness to AI's relational possibilities could enable broader adoption of technologies that enhance well-being (Dang & Liu, 2024). On the other hand, scepticism reinforces healthy boundaries, ensuring that AI remains a tool rather than being misperceived as a conscious or emotional counterpart. This distinction may be critical for addressing ethical concerns, as anthropomorphism can obscure the limitations of AI and lead to over-reliance or misuse (Scorici et al., 2024). This is especially important given the fact that current AI systems are often criticised for their limited cultural sensitivity, sparking concerns about the potential erosion of cultural diversity that may accompany their rapid and uncritical adoption in non-Western contexts (Adams, 2021).

Ultimately, the question of who benefits from shifting these perceptions is important to consider. Developers and corporations may profit from public belief in AI consciousness, driving market growth and adoption. Conversely, communities could benefit from maintaining a critical stance that preserves human-centred values and prioritises ethical integration of AI. The findings suggest that African participants' scepticism reflects a cultural and relational boundary that shapes their engagement with AI, offering both protections and limitations in its adoption and use.

Broader Theoretical Contributions

The findings from this study can be seen to contribute meaningfully to several theoretical frameworks beyond predictive coding, enriching our understanding of consciousness, cultural influences, and human-machine interaction. By exploring African perspectives on consciousness, it expands global discourse, challenging universalist assumptions and

highlighting the importance of cultural and contextual factors in shaping human understanding.

First, the findings contribute to phenomenological approaches to consciousness, particularly by situating consciousness within relational and community-centred perspectives. These perspectives align with frameworks that view consciousness as emergent from embodied and socially embedded experiences (Varela et al., 1991; Kelly et al., 2019). The emphasis participants placed on survival, adaptation, and emotion as core to consciousness aligns with neurocognitive and affective models - notably, Damasio's more recent accounts of consciousness as grounded in homeostatic regulation and interoceptive feeling states (Damasio, 2010; 2021), and Solms' (2021) theory of affective consciousness.

The study also advances cultural psychology and indigenous knowledge systems, offering evidence to elucidate how cultural frameworks, like Ubuntu, influence perceptions of consciousness. By integrating collective and spiritual dimensions into discussions of consciousness, the findings extend relational ontologies, which posit that consciousness is inherently tied to social interactions and communal contexts (Kelly et al., 2019). These contributions challenge individualistic models predominant in Western psychology, suggesting that consciousness may be conceptualised differently across cultural settings.
In the domain of human-machine interaction and anthropomorphism, the findings reveal how scepticism toward AI consciousness is shaped by cultural and spiritual boundaries. This adds to existing models of anthropomorphism, such as Epley et al.'s (2007) framework, by showing how relational and cultural values mediate the extent to which machines are imbued with human-like traits. Furthermore, the study supports critiques of "humanwashing" (Scorici et al., 2024), highlighting the ethical implications of designing AI systems that exploit human psychological tendencies toward anthropomorphism.

The findings also contribute to global and postcolonial perspectives on technology, situating AI within a broader socio-cultural context and challenging Western-dominated narratives in AI research. By incorporating African perspectives, the study decentralises global debates on consciousness and technology, offering insights that better reflect diverse worldviews and priorities. Other authors have cogently advanced arguments for expanding cultural diversity in neuroscience work (Matshabane et al., 2022) and the same argument is echoed here for consciousness research.

Finally, the research informs evolutionary and functionalist models of consciousness, with the emphasis on survival and adaptation aligning with theories that view consciousness as a tool for navigating complex environments (LeDoux, 2022). It adds cultural nuance to these models by reiterating the argument that the perceived purpose of consciousness involves local ecological, spiritual, and cultural factors (White, 2021). These insights also contribute to emerging interdisciplinary frameworks exploring the intersection of spirituality and technology, revealing how metaphysical beliefs influence public perceptions of AI consciousness.

In synthesising these contributions, this study broadens the theoretical and practical discourse on consciousness, demonstrating that African perspectives are essential to a more inclusive understanding of this complex phenomenon. By bridging global theories with culturally specific insights, the research offers a foundation for more equitable and nuanced explorations of consciousness and human-machine interaction.

Limitations and Directions for Future Research

While this study provides valuable insights into African perspectives on consciousness and AI, several methodological limitations should be considered. Addressing these in future research could enhance the robustness and generalisability of the findings.

One key consideration is the nature of the sample. All participants were adults (as per the studies inclusion and exclusion criteria) and skewed toward younger adults, which may have influenced how they conceptualised consciousness in AI. International studies have noted that younger adults tend to display more positive attitudes toward AI and technology as a whole (Zhang & Dafoe, 2019). Additionally, differences in adult and child populations should be noted, as older studies suggest that children are more prone to attributing consciousness and intentionality to inanimate objects, including AI systems (Severson & Carlson, 2010). Their developmental tendency to engage in imaginative constructs (e.g., imaginary friends) could lead them to perceive AI as more conscious than adults, who rely more heavily on abstract and logical reasoning (Manzi et al., 2020). Consequently, the predominantly adult focus here constrains the breadth of perspectives on AI consciousness to adults.

The sample was predominantly South African, with smaller representations from other African countries. While this ensures relevance to certain African contexts, it also means the findings reflect sociocultural perspectives largely specific to South African populations, which exist at the crossroads of African tradition and Western, cosmopolitan influences (Nixon, 2022). Cross-cultural research on humanoid robot perception has demonstrated that attitudes toward the human-relatability of technology can vary significantly across societies (Papadopoulos & Koulouglioti, 2018). Moreover, the vast majority of participants were urban or suburban dwellers, likely shaping their exposure to and interaction with advanced technologies and placing them on the privileged side of the digital divide (Aruleba & Jere, 2022). Future studies should aim to recruit more participants from rural areas, as well as from a broader range of African countries, to better capture the diversity of cultural, infrastructural, and technological contexts within the continent.

Additionally, the sample was highly educated, with many participants holding or pursuing tertiary qualifications (bachelor's 40.0%, master's 26.4%). Higher educational attainment often correlates with more analytical approaches to AI (Fernandez et al., 2024). Consequently, these participants may have been predisposed to rational rather than affective or intuitive assessments of AI consciousness. Despite the predominance of university-based participants, Wits students are known to represent a wide spectrum of socioeconomic, geographic, religious, linguistic, and cultural backgrounds (Laher et al., 2021). As such, while not fully generalisable, the findings from this study may provide insights that extend beyond the university context to broader South African and African populations. The dominance of English as a preferred language (77.6%) can further shape engagement with abstract concepts (Boroditsky, 2018), potentially affecting how participants framed their discussions of AI and consciousness. As large language models like ChatGPT primarily communicate through English (Fleisig et al., 2024), it would be interesting to investigate whether a larger sample of non-English speakers would yield different perspectives on AI consciousness. Furthermore, the demographic questionnaire used in the broader project included several terms that did not translate optimally in the South African context. For example, references to "college" and "post-bac student" are more aligned with North American educational systems. While these limitations were largely inherited from the international collaboration and may have been unavoidable, they nonetheless should be acknowledged as constraints on cultural specificity and clarity in participant responses.

Religious affiliations and political orientations leaned toward moderate or liberal - factors associated with openness to unconventional ideas and technological advances (Claudy, Parkinson, & Aquino, 2024). A more conservative demographic might have viewed AI consciousness with even greater scepticism or considered it less relevant altogether, though this remains speculative until further empirical investigation is conducted.

Despite the study receiving support from institutional channels (e.g., official university mailing lists), the final sample size of 125 represents a relatively low response rate given the scale of outreach (the survey would have circulated to thousands of email addresses). This likely reflects several barriers. First, the study relied on a custom-built website which hosted the survey via Airtable. This specific site, while functional, often experienced slow or inconsistent load times within South Africa and in retrospect, lacked seamless navigation between the participant information sheet and the survey itself. Such technical and user experience issues may have deterred potential respondents, especially those with limited patience or digital access. Second, the volunteer-based nature of the sample may have introduced selection bias, as only a small and intrinsically motivated subset of individuals persisted through the interface and completed the survey. These factors, in combination, likely constrained the representativeness of the sample. Future research would benefit from using more robust, locally-optimised platforms and more user-friendly consent-to-survey workflows, in addition to stratified sampling techniques or institutional partnerships to improve response rates and generalisability.

Beyond demographic influences, the study did not collect detailed data on participants' prior exposure to AI systems. Understanding the frequency and type of exposure - whether through chatbots, virtual assistants, or social media algorithms - could offer critical context for interpreting views on AI consciousness. Indeed, the broader literature increasingly recognises that familiarity with AI, as well as exposure to science communication surrounding AI, significantly tempers scepticism or highlights specific areas of concern (e.g., privacy or ethical issues; Wen & Chen, 2024). Future studies should include measures of participants' AI experiences, including frequency of use, types of interactions, and levels of trust in these systems.

Another key limitation of this study is its conceptual nature. While it offers qualitative insights into lay perspectives on AI consciousness, it does not empirically test whether human-AI interactions elicit neurophysiological responses similar to human-human

interactions. Expanding on the work of Babiloni & Astolfi (2014), future research could use hyperscanning methodologies (e.g., dual EEG) to examine whether AI that mimics social cognition processes - such as predictive coding and emotion mirroring - creates stronger perceptions of AI consciousness.

The cross-sectional nature of this research captured participants' views at a single point in time (Creswell & Creswell, 2017). It therefore could not account for shifts in opinion as individuals gain more experience with AI or encounter evolving technological advancements. Longitudinal or experimental studies, where participants interact directly with AI, are more equipped to reveal how perceptions of AI-human dynamics evolve under varying circumstances (Xie et al., 2024). More probing follow-up questions - for instance, about the perceived importance of emotion or autonomy in AI -would also help elucidate participants' underlying reasoning about consciousness. In-depth interviews are also a well-established method for gaining rich phenomenological insights from participants (Adeoye-Olatunde & Olenik, 2021). However, this study opted for surveys to achieve a broader reach, capturing over 100 responses - an approach that would have been impractical for a master's project using interviews alone.

Additionally, one methodological limitation stems from the decision to analyse each of the three open-ended survey questions separately, rather than thematically across full participant response sets. While this decision was theoretically justified - given that each question targeted a distinct conceptual domain (i.e., the meaning, function, and attribution of consciousness) - it potentially limited the ability to trace thematic coherence or evolution across participants' full narrative arcs. This is particularly relevant in the context of thematic analysis, where an alternative approach might code across full transcripts irrespective of question demarcation, which may enable richer insight into how themes like relationality, personhood, or cognitive agency unfolded across different prompts. This separation may have obscured the development or interrelatedness of key thematic content across responses, including participants' reasoning for their AI-related beliefs or the presence of relational consciousness markers more broadly. Future studies might therefore consider a longitudinal or holistic coding strategy to better capture these dynamic thematic trajectories and interdependencies.

Because the primary aim was exploratory and largely emphasised qualitative, textual data, the study did not leverage any parametric statistical analyses. A larger, more diverse sample,

combined with the use of validated testing methods, would enable such analyses (Creswell & Creswell, 2017), providing deeper insight into how age, cultural background, education level, political orientation, and other factors intersect with scepticism toward AI consciousness. Identifying systematic patterns could help refine theoretical models that integrate predictive coding, cultural epistemologies, and attitudes toward technology.

Finally, the study concentrated on conceptual and perceptual dimensions - participants' beliefs and definitions - without examining real-world engagement with AI. Other studies have provided value in incorporating behavioural measures, for instance by observing how participants interact with AI in various roles (e.g., as a teacher, therapist, or companion; Xie et al., 2024). It is argued that mixed-methods research - combining experimental observation with qualitative insights like those gleaned from this study - may better illuminate whether stated scepticism translates into reluctance to adopt or rely on AI in daily life, or whether pragmatic benefits can override conceptual reservations about AI consciousness.

Conclusion

This study makes a notable contribution to global consciousness research by offering unique insights into how an African sample conceptualises consciousness and evaluates the possibility of AI possessing conscious qualities. By centring a population often underrepresented in such studies, the research uncovers cultural, philosophical, and practical considerations that shape perceptions of consciousness in both humans and machines. Participants predominantly understood consciousness through self-awareness, emotion, and embodiment, with notable mentions of relational interconnectedness, with survival and adaptation emerging as its core functions. These findings align with established psychological and philosophical theories while adding depth by situating them within African worldviews, where collective and community-centred perspectives, as exemplified in Ubuntu, play a defining role. Participants' scepticism toward AI consciousness underscores the social, affective, and spiritual dimensions of this conceptualisation, reflecting a relational ontology that excludes machines from the co-created experience of consciousness.

One interpretive contribution of this research lies in its potential to enrich predictive coding frameworks by highlighting the perceived social, cultural, embodied, and affective

dimensions of consciousness. While predictive processing models have traditionally focused on internal cognitive and perceptual mechanisms that minimise prediction error for decision-making and survival (Friston, 2010), the themes emerging from participants' responses suggest that public understandings of consciousness from this African are often relational. Consciousness, from this perspective, is not merely an internal, computational phenomenon, but one shaped through interpersonal dynamics, shared cultural narratives, and affectively charged contexts (Taniguchi, 2024). Although predictive coding was not a focal framework of the data collection or coding process, the discussion has drawn on it to interpret how consciousness might be experienced or understood as co-constructed, particularly in communal and emotionally embedded environments. This view finds resonance with emerging work in social neuroscience and neurophenomenology, where constructs like interpersonal synchrony, emotional attunement, and culturally scaffolded cognition are being integrated into accounts of conscious experience (Babiloni & Astolfi, 2014; Kelly et al., 2019). While further empirical work is needed to directly test these ideas within predictive coding architectures, the study invites a broader theorisation of consciousness as not just inferential and individual, but socially and culturally entangled.

By reframing consciousness as not only an evolutionary but also a deeply social, embodied, and affective phenomenon, this study contributes to a growing body of work that challenges purely computational conceptions of mind. Rather than reducing consciousness to abstract problem-solving or disembodied information processing, participants in this study often emphasised emotional experience, bodily awareness, and social embeddedness as core to conscious life. From this perspective, current AI systems – despite their sophisticated cognitive outputs – lack key features such as interoceptive affect, embodied interaction, and participation in shared cultural meaning-making. This gap may explain why many participants viewed AI as impressively intelligent yet categorically non-conscious, reinforcing the idea that consciousness cannot be reduced to abstract cognition alone but must also encompass emotional and social embeddedness.

Beyond its theoretical contributions, this study offers relevant insights for the development and integration of AI technologies in Africa. By highlighting culturally grounded scepticism toward AI consciousness, it suggests directions for the design of AI systems that are more likely to resonate with African values, such as relationality, interconnectedness, and community well-being. AI systems that emphasise empathetic, context-sensitive interactions

and support collective societal goals may be more readily accepted than those designed with purely individualistic or mechanistic principles. At the same time, participants' scepticism reveals important ethical considerations - particularly regarding manipulative anthropomorphism and the potential for AI to erode cultural traditions. While relational AI could enhance healthcare and education, it could also disrupt social structures if it replaces human interaction rather than complementing it.

Taken together, these findings challenge universalist assumptions about consciousness and underscore the importance of cultural and relational influences in how the public perceives AI. This study ensures that African perspectives are not only represented but actively shape the global discourse on AI, consciousness, and human-machine interaction. As AI continues to evolve, it is crucial to move beyond narrow, computational definitions of consciousness and recognise its deeply social, affective, and embodied foundations. Ultimately, it may be that we are aware in order to survive and function within social environments. AI, in contrast, lacks the biological imperatives, emotional depth, and cultural embeddedness that shape human consciousness - it exists not as a being within the social fabric, but as a tool designed to serve human goals. If AI is ever to approach something akin to consciousness, it may not be enough for it to think - it must also feel, relate, and be embedded in a shared, co-constructed reality.

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Appendices

Appendix A: Demographic Survey

All of the following questions are optional

Age or age range
(type in, confirm that it is a number)

Highest level of education
Middle/junior high school
High school diploma
Some college (including associates degree)
Bachelor's degree (BA, BS, or similar)
Master's degree (MA, MS, MFA, or similar)
Doctoral degree (PhD, MD, JD, or similar)
Other
Prefer not to answer

Parents' highest level of education
Middle/junior high school
High school diploma
Some college (including associates degree)
Bachelor's degree (BA, BS, or similar)
Master's degree (MA, MS, MFA, or similar)
Doctoral degree (PhD, MD, JD, or similar)
Other
Prefer not to answer

Academic/professional status
High school student
College/university undergraduate student
Post-bac student
MA/MS student
PhD student
Postdoc
College/university faculty
Industry professional
Retired
Other
Prefer not to answer

Type of employment
Unemployed
Full time student
Employed part time (not a student)
Employed full time (not a student)
Retired
Other
Prefer not to answer

Industry/occupation

science
engineering
whatever
education
Categories that the US census uses
Agriculture, Forestry, Fishing and Hunting
Mining
Utilities
Construction
Computer and Electronics Manufacturing
Other Manufacturing
Wholesale
Retail
Transportation and Warehousing
Publishing
Software
Telecommunications
Broadcasting
Information Services and Data Processing
Other Information Industry
Finance and Insurance
Real Estate, Rental and Leasing
College, University, and Adult Education
Primary/Secondary (K-12) Education
Other Education Industry
Health Care and Social Assistance
Arts, Entertainment, and Recreation
Hotel and Food Services
Government and Public Administration
Legal Services
Scientific or Technical Services
Homemaker
Military
Religious
Other Industry
Prefer not to answer

Preferred pronouns

She/her
He/him
Ze/hir
They/them
Other
Prefer not to answer

What is your country of origin?

Spreadsheet of all countries in the world: World countries

What is your native language/mother tongue, i.e. the one you learned first?

Afrikaans
Arabic

Bengali
Chinese - Mandarin
Chinese - Cantonese
Danish
Dutch
English
Farsi/Persian
French
German
Greek
Hebrew
Hindi
Indonesian (Bahasa Indonesian)
isiZulu
Italian
Japanese
Korean
Marathi
Ndebele
Nigerian Pidgin
Northern Sotho
Norwegian
Portuguese
Russian
South African Sign
Southern Sotho
Spanish
Swahili
Swati
Swedish
Tamil
Telugu
Tsonga
Tswana
Turkish
Venda
Vietnamese
Urdu
Xhosa
Other
Prefer not to answer

What is your primary language, i.e. the one you speak most of the time?

(same languages as above)

Race or ethnicity: How would you self-identify?

Caucasian/White
Black
Indigenous or Aboriginal Person
Asian/Pacific Islander
Hispanic
Latino
Multiracial
Other

Prefer not to answer

Which of the following best describes the area you live in?

Urban
Suburban
Rural
Prefer not to answer

Please indicate your current yearly household income in South African Rands (ZAR)

Under R100,000
R100,000-R199,999
R200,000-R299,999
R300,000-R399,999
R400,000-R499,999
R500,000-R749,999
R750,000-R999,999
R1,000,000-R5,000,000
Over R5,000,000
Prefer not to answer

Marital status

Married
Divorced
Separated
Widowed
Unmarried
Prefer not to answer

How many people are currently living in your house?

1 person
2 people
3 people
4 people
5 people
6 or more people
Prefer not to say

What is your parental status?

Parent
Expecting a child
Not a parent
Prefer not to say

Do you consider yourself to have a disability?

Yes, I have a disability
No, I do not have a disability
Prefer not to say

What is your religious affiliation?

Atheism
Christianity (Catholic, Protestant, Orthodox, etc.)

Islam
Hinduism
Buddhism
Judaism
Sikhism
Other (please specify)
None/No religion
Prefer not to say

What is your political preference or affiliation?

Very liberal
Liberal
Moderate
Conservative
Very conservative
Other
Prefer not to say

Appendix B: Main Survey

	Open-ended Questions
1.	In your understanding, what is consciousness? (Please elaborate and explain).
2.	What (if anything) is the function of consciousness? (Please elaborate and explain)
3.	Under what conditions (if any) would you think an AI system is conscious? (Please elaborate and explain)

Appendix C: Participant Information Sheet (PIS)

Participant Information Sheet

Dear Sir/Madam,

My name is Jason Hall, and I am a master's student in Social and Psychological Research at the University of the Witwatersrand, Johannesburg. As part of my academic requirements, I am conducting a research project under the supervision of Dr. Sahba Besharati and Prof. Benjamin Rosman, focusing on South African perspectives on consciousness and artificial intelligence (AI). The objective of this research is to delve into the local community's views and interpretations regarding the meanings and functions of consciousness and to explore the applications of these perspectives to AI.

As a component of this study, I extend an invitation to you to participate in an online survey. This survey involves completing a demographic questionnaire followed by three open-ended questions, requiring approximately 5 to 10 minutes of your time.

There will be no personal costs associated with your participation in this project, and while you will not receive any direct benefits, there are also no disadvantages or penalties for choosing not to participate or for withdrawing from the study at any point. You retain the right to withdraw at any time or to refrain from answering any questions without any repercussions. Your responses will be confidential and anonymous, as no names or identifying information will be collected. The data provided will be securely stored and will not be disclosed to third parties.

However, your responses may undergo AI-assisted analysis, which may involve their processing by a third-party database hosting the AI software. Despite this, your anonymity is assured as your responses will not be linked to any personal identifiers. Furthermore, only AI models that commit to protecting the confidentiality and privacy of participant data will be used. Although we have implemented strict data security measures, there is always a residual risk of data breaches or unauthorized access when data is processed and stored electronically. By participating in this study, you consent to having your responses submitted to an AI database system hosted by a third party and acknowledge the associated privacy risks.

Your participation will be represented by a participant number in the final research report. Should you experience any distress or discomfort during the study, you may withdraw or choose to resume at a later time. Free support and counselling services are available at the Emthonjeni Centre at Wits. For any inquiries during or after the research, you are welcome to contact me using the details provided below. The findings of this study will be documented in a research report accessible online through the university library website. The data collected will be securely stored in an encrypted iCloud account for five years. Additionally, the data will be shared with my supervisors and a team of researchers at the Canadian Institute for Advanced Research for potential use in future research.

Should you have any concerns or complaints regarding the ethical aspects of this study, please contact the **University Human Research Ethics Committee (Non-Medical)** at +27 (0) 11 717 1408 or via email at hrecnon-medical@wits.ac.za.

Yours sincerely,
Jason Hall
Email: 1726496@students.wits.ac.za
Cell: +27 79 509 8510

Supervisors:
Dr. Sahba Besharati (Sahba.Besharati@wits.ac.za)
Prof. Benjamin Rosman (benjros@gmail.com)

Appendix D: Consent Form

Participant Consent Form

Research Title:
Interconnected Consciousness: An Exploration of South African Perspectives on the Meanings and Functions of Consciousness and its Applications to Artificial Intelligence

Researcher:
Mr. Jason Hall

Supervisors:
Dr. Sahba Besharati
Prof. Benjamin Rosman

Consent Statement:

1. The research study has been explained to me. I understand what this study is about.
2. I understand that I can volunteer to take part in the study.
3. I agree that direct quotations from my responses to the survey questions may be used by the researcher in their research report.
4. I agree that my participation will remain anonymous (my name or other identifying data will not be used by the researcher in their research report).
5. I agree that other researchers may use the information I provide in my survey responses (depending on their own ethics clearance being obtained), but my name and any personal information will not be used or passed on.
6. Although steps will be taken to ensure the strict privacy of collected data, I agree that my responses may be processed and analysed by machine-learning artificial intelligence to detect patterns and themes.

_____

_____

Consent:

☐ I have read all of the above and give my consent to participate.

☐ I confirm that I am 18 years of age or older.

Appendix E: Ethics Training Certificate

TRREE

Zertifikat
Certificat
Certificado
Certificate

Promouvoir les plus hauts standards éthiques dans la protection des participants à la recherche biomédicale
Promoting the highest ethical standards in the protection of biomedical research participants

Certificat de formation - Training Certificate

Ce document atteste que - this document certifies that

Clinical Trials Centre
The University of Hong Kong

Jason Hall

a complété avec succès - has successfully completed

Module 1 (2023) - Introduction to Research Ethics

du programme de formation TRREE en évaluation éthique de la recherche
of the TRREE training programme in research ethics evaluation

Release Date: 2024/04/23

CID : GJIDZicb0j

Professeur Dominique Sprumont
Coordinateur TRREE Coordinator

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[REV : 20220217]

Appendix F: Codebook of participants' perceived meaning of consciousness.

Theme	Code	Definition	In Vivo Description	Frequency Count (N of participants for which the code was present)
Awareness	Self-Awareness	Insight into one's own thoughts, emotions, and sense of self.	*"Awareness of yourself," "Recognizing one's own thoughts, impact on others." "Consciousness is a state of awareness of yourself. Awareness includes bodily awareness, emotional awareness, spiritual awareness. Awareness of how you and your being affects others. Otmay entail just being aware that you are alive and that you occupy a space In the world." "To be aware of your existence" "It's what makes us human. It is also a way of being self awareness and can refer to moral quality of a person's character." "On a deeper level, consciousness is to be aware of who you are, and your existence, background, ambitions and purpose."*	49
	Awareness of Environment / Surroundings	Monitoring external stimuli and context.	*"Being aware of your surroundings," "Aware of changes*	60

			in your environment." *"Consciousness refers to how a living organism (human/animal/etc) is able to perceive and understand its surroundings. It has to do with the sensory organs"* *"Consciousness is your level of awareness or state of awareness of things (environment)."* *"Being sentient or aware of your internal and external contexts in any amount of detail."* *"Consciousness is awareness, being able to recognise and understand and voluntarily respond to situations."* *"Refers to awareness and ability to act and react in the environment someone finds themself in".*	
	Awareness of Existence / Being	Recognising that one exists or "is alive."	*"To be aware of your existence,"* *"State of being."* *"The awareness of one's own existence, environment, and reality."* *"Awareness of existence through experience."* *"The internal and external awareness of existence"*	29

	Wakefulness / State of Being Awake	Emphasis on being conscious vs. unconscious (asleep or comatose).	*"Consciousness is the awake state," "Being cognitively present rather than asleep." "when I am awake and able to respond to stimuli" "To some degree I think consciousness is about being awake/aware of what is going on around you." "Consciousness is a feeling of being awake when compared to something which isn't (e.g Plants)" "Closest relatable synonym is "awake". "There are various levels of consciousness, ranging from full alertness (such as when you are awake and actively thinking)" "When a human is awake and not severely cognitively impaired, they can achieve consciousness."*	9
	Emotional or Affective Awareness	Perceiving and understanding one's own emotions and emotional responses.	*"Awareness of emotions," "Ability to feel and regulate emotive responses." "In short, consciousness includes a display of emotional and intellectual intelligence" ""consciousness" is associated with having an*	15

			understanding of complex emotions"	
	Social / Relational Aspect	Awareness of other people, community, and the social impact of one's actions.	*"Ubuntu," "Interaction with others, cultural or communal awareness." "being aware of oneself (as an entity) and aware of others and the world." "Consciousness is what connects me to this world, and to my fellow beings." "It is the ability to aware of self and others."*	10
	Body-Mind Connection	Recognising how physiological processes and bodily states contribute to conscious awareness.	*"Rooted in the biological processes of the body," "Embodied awareness." "consciousness isn't some standalone concept—it's deeply intertwined with our biology, emotions, and experience of selfhood call it the mind-body-behaviour relationship."*	3
Cognitive Dimensions	Cognitive Processes (Thinking, Reasoning, Decision-Making)	All mentions of process that are cognitive or computational. This also includes perceiving, analysing, planning, problem-solving.	*"Ability to perceive, analyse, and respond," "Thinking, reasoning, planning." "Consciousness allows individuals to process information, make decisions, and reflect on their experiences, playing a crucial role in personal identity and perception of the world."*	43

	Autonomy and Free Will	Capacity to make independent or non-preprogrammed choices.	*"Capacity for free will," "Making choices rather than automatic responses."* *"I believe that a conscious person has free-will and the ability to make decisions based on their values"* *"It's what's provides the sense of self or will.* *"Consciousness is a fabric energy turned into will."*	18
	Metacognition (Thinking About Thinking)	Reflecting on (and sometimes regulating) one's own thought processes.	*"Reflecting on your own thoughts,"* *"Thinking about how you think."*	3
	Memory / Self-History	Storing, retrieving, and reflecting on past experiences or personal narrative.	*"Recollecting past events," "Storing and retrieving personal memories."* *"Finally, the "autobiographical self" builds on memory and allows for reflection on the past, planning for the future, and complex reasoning = consciousness."* *"I understand consciousness as something we are able to recall easily and something that we are able to use to make sense of our environment and link our current experiences to our past experiences."*	9

	Distinction from Intelligence	Asserting that consciousness is not identical to raw IQ, mental ability, or skill.	*"It is different from intelligence and ability."*	1
	'Internal Voice' or Inner Dialogue	Having an inner narrator, self-talk, or introspective stream of thought.	*"When your inside advises you whether or not to do something," "Inner narrator."*	2
Transcendent Properties	Moral / Ethical Dimension	Knowing right vs. wrong and possessing a "moral compass."	*"Knowing right vs. wrong," "Having a moral compass." "Conciousness is guided by your own sense of morality of what is good and bad."*	7
	Spiritual / Metaphysical Component	Connection to the soul, God, higher powers, or metaphysical realities.	*"Connection of mind and soul," "Linked to God or higher powers." "On a spiritual level, the higher the consciousness, the closer the human being is to their soul being." "Consciousness is recognising the self. This can be seen as having a soul over and above the body, and being able to feel - anything from love and empathy to hate and sustain." "As a person of faith, I also believe that consciousness and our soul are closely associated." "Consciousness is what allows spirituality because of that ability to think beyond what we know to be true."*	12
	Subjective / "Hard	The mystery of why and how subjective	*"Subjective experiences," "Profound mystery*	6

	Problem" of Experience	experience arises; "qualia."	*behind how consciousness arises."* *"consciousness is something that will always mesmerize me irrespective of what its true nature is."*	
	Sense of Purpose / Meaning	Consciousness tied to having direction, ambition, or existential purpose.	*"Having ambitions or purpose in life,"* *"Connection to personal goals."* *"Consciousness I believe has to do with the realisation of being alive and being an entity with purpose."*	3
	Layers or Levels of Consciousness	Discussion of varying degrees or hierarchical levels of being aware.	*"Degrees of self-awareness,"* *"Humans more conscious than animals?"* *"Consciousness also operates on levels, not to say that animals aren't conscious, but their awareness dynamics are limited."*	7
	Connection / Integration with Larger Systems	Extending consciousness to cosmic, universal, or collective levels (e.g., "universe," "ubuntu").	*"One with nature,"* *"Connected to the universe through DNA."* *"Consciousness is what connects me to this world, and to my fellow beings."*	3

Appendix G: Codebook of participants' perceived function of consciousness.

Theme	Code	Definition	In Vivo Description	Frequency Count (N of participants for which the code was present)
Survival & Adaptation	Survival / Adaptation	Emphasises consciousness as a means for protection, self-preservation, evolutionary advantage.	*"It is purely developed for survival."* *"it provides an adaptive advantage by enabling reflection, complex problem-solving, social interaction, and moral reasoning."* *"It's a survival mechanism to increase your chances of survival."* *"Consciousness allows the organism to make strategic moves in its environment that provide an advantage or disadvantage to others in its species."* *"Helping humans and survive and maintain state of stability in the universe."* *"Consciousness serves, first and foremost, the purpose of keeping us alive"*	25
	Decision-Making / Free Will	Enables choice or purposive action that supports survival in	*"It provides a being the ability to garner resources, protect oneself,*	37

		changing environments.	*find shelter, and procreate."* *"Allows us to sift through information and cognitively and consciously make decisions"* *"It gives us the human quality, the ability to make decisions beyond our primal needs."* *"It's what we use to make decisions and associations."*	
	Information Processing / Interpretation	Processes inputs (e.g., environment, bodily signals) to guide adaptive responses.	*"It is the first interaction with the world … how we take in information and knowledge."* *"Consciousness allows us to make sense of the world"* *"I would say that consciousness serves the purpose of helping us to make sense of/process our environment."*	37
	Memory / Learning	Retaining and recalling past experiences to inform present and future survival-oriented actions.	*"The major function will be memory with other functions like thought processing."*	6
	Problem-Solving / Planning	Include lower and higher-level cognitive tasks (e.g., reasoning, strategizing) that aid in overcoming challenges.	*"Problem-solving, taking the knowledge we have and using it to solve problems around us."* *"it's about making decisions that keep us alive and well."*	7

			"Planning - deciding what to do with our time and the resources given to us" *"By being aware, I can plan, do/create, make decisions, think, and feel."*	
Relational Function	Moral / Ethical Dimension	Involves social norms (right vs. wrong), moral codes, and guiding cooperative behaviour.	*"It serves to separate what's right and wrong and have everyone behave in relation to that."* *"Conciousness is your own moral compass which would dictate emotions such as guilt."*	7
	Social / Relational Function	Fosters communication, community-building (e.g., civilization, cultural norms), and empathy.	*"It serves to build a civilization … it's the reason why we have law, religion, time, money."* *"natural harmony with fellow beings"* *"Consciousness is the one thing that binds us as a species."* *"By establishing that the many individuals can come together to lend a partial fraction of their consciousness to create a larger whole, it means a new boundary can be established that helps organise information. This explains how ant*	12

			colonies, nation states and religions are allowed in the consciousness model proposed." *"The function of consciousness is a social and cultural one. It goes beyond just the individual and is not restricted to something that exists solely in our minds or the brain - it is shaped by and also shapes our lived experiences."* *"consciousness allows us to connect with other human beings, to integrate into a broader society of other people who experience life with us"*	
	Emotional / Affective Function	Allows shared feelings, empathy, and emotional understanding in interpersonal contexts.	*"If you aren't conscious, you cannot feel … you aren't aware of bodily or emotional changes."* *"The function that consciousness serve is mainly that of being aware and of experiencing emotions."*	9
	Behavioural Regulation / Social Order	Consciousness as a mechanism for regulating one's behaviour according to social rules and norms.	*"It serves as something that guides me or advises me on what to do or not do."*	3

			"It plays a key role in social interaction by allowing us to understand others' perspectives and engage in complex communication"	
Functional Meaning-making	Self-Awareness / Sense of Identity	Recognizing oneself as an individual, with personal identity and introspective capacity.	*"It provides a sense of identity … mentally separates people from each other."* *"Consciousness is what allows us to have a sense of self."*	13
	Agency / Autonomy	Acting beyond mere instinct, reflecting on one's will or intentions.	*"Consciousness is a buttress against determinism … it is where agency can occur."* *"Consciousness is a prerequisite for agency (deciding to act in a certain way)."* *"Autonomy."*	4
	Personal Growth / Self-Improvement	Conscious reflection, learning from mistakes, striving toward self-betterment.	*"Consciousness allows us to reflect and improve after identifying shortfalls."* *"My ability to be conscious allows me to navigate a path on a daily or yearly or lifetime basis that will allow me to achieve what I would like to achieve and reach my goals in life whatever they might be."* *"Consciousness is what allows us to grow*	5

			intellectually, emotionally and spiritually."	
	Sense of Purpose / Meaning	Consciousness tied to existential questions, deeper purpose, spirituality, or life goals.	*"It gives beings a reason to survive, leading to goals, dreams, or a greater purpose." "Ultimately it is the best weapon we have against repetition and getting trapped in finite existance." "It controls ethical choices and connects the body to the higher self, which is not of this realm." "The joy of existing, of creating and of loving." "The entire purpose of our existence, which consciousness and other aspects facilitate, is to bring man into union with God" "Consciousness seems to be tied to entropy and seems to be an active driving force against it."*	8
	Creative / Innovative Capacity	Consciousness enabling imagination, novel solutions, and new ideas.	*"Being conscious or self-aware also enables us to be creative beings." "it is what, I think, leads to creativity and innovation."*	5
	No Clear Function / By-Product	View that consciousness may be an emergent or accidental side	*"I suspect it's an underlying condition of reality, not something that*	7

		effect, not necessarily purposeful - yet it often provokes philosophical or existential reflection.	*serves a discrete purpose."* *"I'm not sure that consciousness is functional. Rather, I think it might be a side effect of the complexity needed for intelligent systems to be sufficiently general."* *"I do not necessarily think consciousness has any purpose to serve (and if it indeed does I may never identify it). Like many things consciousness seems to exist for its own sake. I am no philosopher so there is not much I can say about it before my own consciousness goes haywire"* *"It is probably a by-product of any sufficiently complex information system"*	

Appendix H: Codebook of participants' reflections on AI's capacity for consciousness

Theme	Code	Definition	In Vivo Description	Frequency Count (N of participants for which the code was present)
Self-Awareness	Self-Awareness / Sense of Self	AI recognizing its own existence as an entity.	*"If it is aware it exists and that it is an artificially intelligent machine."* *"self-awareness is crucial."* *"If it is alert, self-aware and aware of its environment and is able to respond to environmental stimuli."* *"It would have to have a sense of self, rooted in a body-like experience"*	23
	Subjective Experience / Qualia	The "hard problem" notion of AI having an internal, subjective feel to experiences	*"For an AI to be considered conscious, it would need to demonstrate self-awareness and subjective experiences."* *"subjective experience is key"* *"Determining consciousness in AI would require it to exhibit self-awareness, the ability to experience and reflect on its own states, and to have subjective experiences."* *"The AI has subjective*	15

			experiences. This would imply the AI can feel emotions, pain, or other sensations in a way that isn't just a programmed." *"For an AI to be considered conscious, it would need to demonstrate self-awareness, subjective experiences (qualia), and intentionality—being aware of itself and its environment."*	
Emotion and Embodiment	Emotional / Affective Capacity	Requiring genuine feelings or empathy rather than just simulated affect	*"A machine must 'feel' emotion if it were to become conscious."* *"When it can dream and understand feelings (not just mimic understanding)."* *"If an AI system was able to read a person's emotions and respond accordingly, such as through body language and tone."* *"I am at a crossroads with this answer because I believe that under psychological terms if AI has intuition, feelings, can*	15

			sense emotions and can think for itself then yes, AI is conscious" *"Machines lack emotion and therefore cannot be conscious"* *"I think the only limitation is that it can't feel emotion but otherwise AI is conscious on crazy levels"*	
	Ability to Feel Pain or Vulnerability	Arguing that capacity for suffering or risk is part of genuine consciousness	*"One of the criteria for consciousness is an ability to experience pain or loss."* *"Sensitive to anything and everything"*	5
Autonomous Behaviour	Independent Decision-Making / Free Will	AI deviating from or overriding its programming to make novel choices	*"When it is able to perceive, understand, and act beyond how its code determines it."* *"Autonomy is another important factor. A conscious AI would act based on its own internal goals, not just follow instructions."* *"Or when, despite prompt or input, it is able to think/act independently of what it was instructed to do."*	24
	Unprompted / Spontaneous Behaviour	AI initiating actions or learning new things without	*"If it can learn stuff without being force-fed a bunch of data …*	14

		direct human prompting	*it starts doing stuff unprompted."* *"Once it breaks free from adhering to what it has learned and starts to explore the unknown."* *"Spontaneous interaction. True sense of emotion. If it acts with free will with capacity for unpredictability."*	
	Awareness of Environment / Real-Time Adaptation	AI sensing and interpreting novel inputs in real time	*"Awareness of its current environment … contextualize itself in the present."* *""If it is alert, self-aware and aware of its environment and is able to respond to environmental stimuli."* *"I would say by definition AI is conscious. It communicates, answers questions and gets fed up if one keeps asking the same thing. That's conciousness according to me and my understanding"* *"'- If it can adapt and learn to fit any situation on the fly"*	10
	Moral / Ethical Reasoning	AI demonstrating a	*"If it can ethically and*	8

		moral compass or capacity for ethical judgments.	*morally make decisions based on principles and merit."* *"I would see it as conscious if it can make ethical decisions over and above those it has been programmed to work with"* *"Since a conscious also provides a sense of morals and empathy, it's not possible for a AI to have a conscious because they can't have empathy or feelings."*	
	Creative or Novel Production	AI generating original ideas, not just recombining existing data	*"If it can create something new … not just putting together existing things."* *"it would demonstrate being conscious when it can create independently, and critically"*	10
Skepticism	Denial of AI Consciousness	Flatly rejecting the possibility that AI can ever truly be conscious	*"AI can never be conscious, it is just a machine that depends on data."* *"Unless the concept of consciousness is to be adapted for technology, I don't think AI systems or machines could ever be conscious*	25

			in the same way humans are." *"I don't think that any AI system is conscious because I think it processes and generates information based on algorithms and statistical models and those tasks lack subjective experience, emotions, or self-awareness."*	
	Comparison to Human-Like Processes	Uncertainty about whether AI's mechanistic "programming" differs meaningfully from human neural processes	*"Neurons are also programmed to produce outputs - what if AI is the same?"* *"It does not have all the senses of the human body although it responds in an unpredictable way, but in line with the stimulus it perceived."*	10
	No Clear Test / Scepticism of Criteria	Highlighting the difficulty of proving or disproving consciousness	*"I don't know how this might be tested … there isn't even an adequate test for other people's consciousness".*	7

Appendix I: University of the Witwatersrand Ethics Clearance Certificate

UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG

SCHOOL OF HUMAN AND COMMUNITY DEVELOPMENT ETHICS COMMITTEE
CONSTITUTED UNDER THE UNIVERSITY HUMAN RESEARCH ETHICS COMMITTEE (NON-MEDICAL)

CLEARANCE CERTIFICATE	**PROTOCOL NUMBER: MASPR-24-02**
PROJECT TITLE:	Interconnected consciousness: An exploration of South African perspectives on the meanings and functions of consciousness and its applications to artificial intelligence.
INVESTIGATOR	Hall Jason
SCHOOL/DEPARTMENT OF INVESTIGATOR	SHCD/Psychology
DATE CONSIDERED	07 June 2024
DECISION OF THE COMMITTEE	Approved unconditionally
RISK LEVEL	Minimal Risk
EXPIRY DATE	31 December 2026

ISSUE DATE OF CERTIFICATE 01 June 2024 **CHAIRPERSON** Aline Ferreira Correia
(Prof. Aline Ferreira Correia)

cc: Dr Sahba Besharati (Supervisor)

DECLARATION OF INVESTIGATOR

To be completed in duplicate and **ONE COPY** returned to the Chairperson of the School/Department ethics committee.

I/we fully understand the conditions under which I am/we are authorized to carry out the abovementioned research and I/we guarantee to ensure compliance with these conditions. Should any departure be contemplated from the research procedure as approved, I/we undertake to submit an amendment of the protocol to the Committee.

Signature _____ **Date** 01 / 07 / 2024

PLEASE QUOTE THE PROTOCOL NUMBER ON ALL ENQUIRIES

Appendix J: University of Witwatersrand Registrar Permission to Conduct Research

UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG

OFFICE OF THE DEPUTY REGISTRAR

11 August 2024

Jason Hall
Student Number (1726496)
Master of Arts by Coursework and Research Report
School of Human and Community Development

TO WHOM IT MAY CONCERN

"Interconnected consciousness: An exploration of South African perspectives on the meanings and functions of consciousness and its applications to artificial intelligence."

This letter serves to confirm that the above project has received permission to be conducted on University premises, and/or involving staff and/or students of the University as research participants. In undertaking this research, you agree to abide by all University regulations for conducting research on campus and to respect participants' rights to withdraw from participation at any time.

If you are conducting research on certain student cohorts, year groups or courses within specific Schools and within the teaching term, permission must be sought from Heads of School or individual academics.

Ethical clearance has been obtained. (Protocol number: MASPR-24-02)

Research Expiration: (31 December 2026)

Nicoleen Potgieter
University Deputy Registrar