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Review

# Amos Tutuola and the African Mind: A Behavioural Neuroscience View of Culture, Cognition, and Unconventional Delivery of the Narrative

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## Abstract

Amos Tutuola (1920–1997) occupies a distinctive place in Nigerian literary history as the first novelist to introduce Nigerian oral storytelling to a global audience through a fusion of Yoruba folklore and unconventional English expression. While his works have been extensively examined within folkloric, postcolonial, and linguistic traditions, their relevance to cognition and behaviour remains underexplored. This theoretical review advances the argument that Tutuola's narratives function as an indigenous cognitive archive that aligns closely with principles articulated in behavioural and cultural neuroscience. Focusing on *The Palm-Wine Drinkard* and *My Life in the Bush of Ghosts*, the paper examines how narrative structures and motifs intuitively encode processes such as emotional regulation, fear learning, moral conditioning, altered states of consciousness, and predictive cognition within a Yoruba-Nigerian cultural framework. Rather than representing escapist fantasy or literary eccentricity, Tutuola's storytelling reflects culturally-grounded models of perception, belief formation, and behavioural adaptation shaped by social, ecological, and spiritual realities. By situating Tutuola's work within contemporary neuroscientific discussions of narrative cognition and culturally embedded behaviour, this review highlights the value of indigenous Nigerian narrative frameworks for advancing behavioural neuroscience research. The manuscript argues that integrating such frameworks can enhance ecological validity, refine interpretations of mental health and behaviour, and support culturally informed models of cognition relevant to Nigerian populations. More broadly, the paper calls for greater engagement between literary scholarship and behavioural neuroscience as a means of deepening understanding of how culture shapes the mind.

**Keywords:** behavioural neuroscience; cultural neuroscience; narrative cognition; cultural cognition; indigenous knowledge

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## 1. Introduction

Behavioural neuroscience is an integrative discipline concerned with understanding how the brain and broader nervous system give rise to behaviour, cognition and emotion [1]. Drawing on psychology, biology, physiology, and anatomy, the field examines how neural circuits, neurotransmitter systems, and physiological processes interact to shape observable behaviour and mental states [1,2]. Despite its integrative scope, much of behavioural neuroscience has developed within Western epistemological traditions, often underemphasizing the diverse cultural environments in which human brains develop and function [3]. In response, cultural neuroscience has increasingly demonstrated that core cognitive processes: including perception, moral judgement, emotion regulation, and threat appraisal are profoundly shaped by sociocultural context [3,4]. Despite growing recognition of cultural influences on cognition, behavioural neuroscience has

devoted comparatively little attention to the culturally embedded narrative systems through which cognitive, emotional, and moral frameworks are learned, rehearsed, and transmitted [5,6].

Narrative traditions constitute a fundamental mechanism through which human societies organise experience, transmit knowledge, and regulate behaviour across generations. Spanning oral histories, folklore, and contemporary cultural forms, storytelling functions as a cognitive framework for meaning-making and self-positioning within the social world [7–9]. Within cognitive and behavioural neuroscience, narratives are now recognised not merely as cultural artefacts but as structured simulations that engage memory, emotion, prediction, and social learning. Through storytelling, individuals learn how to interpret danger and safety, assign moral value to actions, regulate affect, and make sense of uncertainty [7–9]. However, much of the neuroscientific literature on narrative cognition has relied on Western literary forms and experimental paradigms, leaving indigenous narrative systems comparatively underexplored [10,11].

African narrative traditions, rooted in oral cosmologies and communal knowledge systems, constitute important yet under-utilised resources for understanding culturally embedded cognition. Within this broader African context, Nigerian storytelling, particularly within Yoruba oral tradition offers a rich repository of indigenous cognitive frameworks [12,13]. These narratives are characterised by non-linear temporality, fluid boundaries between the material and spiritual realms, and moral systems grounded in communal rather than individualistic values. Such features reflect adaptive responses to social organisation, ecological uncertainty, and metaphysical belief systems across many African societies, suggesting that indigenous narratives function as behavioural guides that scaffold emotional regulation, moral learning, and threat processing within specific cultural contexts [14,15]. Despite this potential relevance, Nigerian literary works have rarely been examined through the lens of behavioural or cultural neuroscience.

Amos Tutuola (1920–1997) occupies a pivotal position within this landscape. His novels, most notably *The Palm-Wine Drinkard* and *My Life in the Bush of Ghosts* draw extensively on Yoruba oral storytelling while employing unconventional narrative structures that initially challenged Western literary expectations. Scholarly interpretations of Tutuola's work have predominantly focused on folklore, postcolonial identity, and linguistic innovation; with limited attention to the cognitive and behavioural processes embedded within his narratives [16,17]. This theoretical review advances the argument that Tutuola's storytelling constitutes an indigenous cognitive archive that aligns closely with contemporary principles in behavioural and cultural neuroscience. By analysing recurrent narrative motifs and structures, the manuscript demonstrates how his works encode processes such as emotional regulation, fear learning, moral conditioning, altered states of consciousness, and predictive cognition within a Yoruba-Nigerian worldview. Rather than interpreting these narratives as fantastical or pre-scientific, the paper reframes them as culturally grounded models of perception and behavioural adaptation. In doing so, it argues for the integration of indigenous Nigerian narrative frameworks into behavioural neuroscience research as a means of enhancing ecological validity, improving cultural sensitivity in mental health interpretation, and broadening theoretical accounts of how culture shapes the mind.

## 2. Behavioural Neuroscience, Culture, and the African Brain

One of the major aims of behavioural neuroscience is to elucidate how neural systems generate behaviour, emotion, and cognition through the integration of perspectives from psychology, biology, physiology, and neuroscience [1,2]. Historically, the field has prioritised experimentally- controllable behaviours and laboratory-based models [18–21], often emphasising universal mechanisms at the expense of cultural specificity [22]. However, accumulating evidence from cultural neuroscience challenges this assumption, demonstrating that cognitive processes are not culturally neutral but are shaped by sociocultural environments, values, and belief systems across development [23,24]. Contemporary neuroscience increasingly conceptualises the brain as a predictive organ that constructs models of the world based on prior experience [25]. Predictive processing frameworks propose that perception and behaviour are guided by learned expectations rather than sensory input

alone [26,27]. Cultural neuroscience extends this account by demonstrating that predictive expectations are socially and culturally structured. Social norms, belief systems, and collective memory shape the predictive models through which the brain interprets sensory information and guides behaviour [28]. An individual's cultural background therefore influences the priors their brain develops, affecting how emotional cues are perceived, how moral judgements are formed, and how decisions are made. Evidence suggests that such cultural shaping extends to fundamental neural processes, such that neural responses to comparable stimuli can differ markedly across cultural contexts [29]. These differences arise because the salience assigned to specific cues and the expectations brought to a given situation are culturally patterned rather than universal [29,30]. In this sense, culture is not merely a contextual backdrop for cognition but an integral component of the brain's predictive machinery, fundamentally shaping how individuals perceive, interpret, and interact with their world. Within this context, narratives occupy a central role in the cultural shaping of cognition.

From a behavioural neuroscience perspective, narratives function as structured cognitive simulations that enable individuals to rehearse emotional responses, moral judgements, and behavioural strategies without direct real-world consequences [31]. Neuroimaging evidence suggests that narrative engagement recruits a distributed network of brain regions involved in imagination, social cognition, emotion, and decision-making [32–34]. Central to this process is the default mode network, which supports internal mentation, self-referential processing, and perspective-taking during narrative comprehension. The prefrontal cortex contributes executive control, facilitating moral evaluation, outcome anticipation, and the planning of behavioural responses [32–34]. In parallel, limbic structures such as the amygdala and hippocampus mediate emotional processing and memory encoding, allowing narratives to evoke, regulate, and consolidate affective experiences [35]. Together, these neural systems underpin the “simulation hypothesis,” whereby stories provide a vicarious learning space in which social understanding and emotional competence are refined [32,33]. Through repeated engagement, storytelling recruits memory, affective, and predictive mechanisms that support the internalisation and intergenerational transmission of culturally-salient behavioural knowledge [36]. Crucially, narratives function not merely as representations of experience but as regulatory frameworks that shape perception, emotion, and action within specific sociocultural contexts. Despite growing recognition of narrative cognition within neuroscience, much of the existing literature remains anchored in Western narrative forms and experimental paradigms. Indigenous narrative systems particularly those rooted in oral traditions remain substantially underrepresented, thereby limiting the ecological validity of neuroscientific models of cognition and behaviour.

In many African contexts, where communal ethics and spiritual causality continue to shape social life, cognition cannot be adequately understood through individualistic Western models alone. The narratives of Amos Tutuola offer a rare literary record of an indigenous African cognitive ecology, one in which material and spiritual domains coexist as legitimate and interacting sources of explanation, moral regulation, and behavioural guidance [37,38]. Tutuola's storytelling illuminates the complexity of culturally-embedded cognition, demonstrating that frameworks privileging individualistic and strictly material interpretations are insufficient in settings where collective values and spiritual meaning are central to understanding the world [39]. These perspective stands in contrast to dominant Western cognitive models that often compartmentalise reality into discrete material and abstract domains. In Tutuola's narratives, characters routinely navigate environments in which physical and metaphysical dimensions are intertwined, reflecting a holistic epistemology that informs social behaviour, moral reasoning, and decision-making across many African communities [40]. Viewed through this lens, Tutuola's work challenges universalist assumptions about human cognition and underscores the need for more-inclusive theoretical approaches that recognise culturally-specific ways of knowing and interpreting experience.

### 3. Amos Tutuola's literary works as an Exemplar of Culturally-Situated Cognition

Amos Tutuola holds a singular place in the Nigerian literary history as one of the first writers to render Yoruba oral narrative traditions into written texts accessible to an international audience [41,42]. His most influential works, including *The Palm-Wine Drinkard* and *My Life in the Bush of Ghosts*, are deeply-rooted in Yoruba cosmology and storytelling practices [43], yet they employ narrative forms that depart significantly from dominant Western literary norms [42–44]. Early critical appraisals often framed his writing as unsophisticated, excessively-fantastical, or linguistically-flawed; assessments that largely stemmed from the application of Western literary criteria to narratives grounded in indigenous epistemologies [41–44]. Later scholarship has more-appropriately situated Tutuola's work within folkloric, postcolonial, and linguistic discourses, though its implications for understanding cognition and behaviour have remained relatively-underexplored [37,38,40].

Viewed through the lens of behavioural neuroscience, Tutuola's narratives may be understood as a rare textual repository of indigenous Nigerian cognitive frameworks. His storytelling offering insight into culturally-patterned ways of experiencing emotion, managing fear, negotiating morality, and interpreting uncertainty. Central to these narratives is a cosmological orientation in which material and spiritual dimensions of existence are not segregated but dynamically-interwoven [42]. This integrated worldview reflects Yoruba conceptions of reality in which ancestors, spirits, and non-human forces actively shape human affairs, moral outcomes, and behavioural choices [42,43]. Tutuola's narratives also articulate a fluid and relational conception of selfhood. Characters frequently shift forms, traverse ontological boundaries, or occupy multiple states of being, blurring distinctions between human, animal, and spiritual consciousness. Such representations challenge Western psychological models that emphasise a stable, autonomous self and instead resonate with African philosophical perspectives that foreground relational identity, interconnectedness, and continual transformation within social and ecological systems. From a cognitive standpoint, these narrative patterns model adaptive strategies for navigating environments marked by uncertainty and interdependence.

Tutuola's affirmation of indigenous knowledge systems highlights the role of culturally-grounded cognitive frameworks in shaping perception, learning, and behavioural regulation. By portraying these systems as coherent and functionally-adaptive, his narratives emphasise the importance of a culture's internal logic in organising experience and guiding behaviour. This cognitive orientation is further reinforced through Tutuola's distinctive use of English [37,38], which mirrors the syntactic structures and idiomatic patterns of Yoruba speech. Rather than representing a linguistic deficit, this hybridity reflects the encoding of culturally-specific cognitive schemas within language, illustrating how linguistic form serves as a vehicle for the transmission and consolidation of culturally-embedded patterns of thought across generations [45,46]. Across his narratives, Tutuola consistently privileges collective wellbeing, reciprocity, and interdependence among human and non-human actors [45,47]. This emphasis contrasts sharply with Western narrative traditions that often foreground individual achievement and domination, offering instead a cognitive orientation in which social cohesion, relational ethics, and balance are central. Taken together, Tutuola's work illustrates how fundamental cognitive processes including conceptions of reality, selfhood, morality, and knowledge are deeply-shaped by specific cultural cosmologies. His narratives therefore challenge universalist claims about human cognition and underscore the value of culturally-grounded approaches within behavioural and cultural neuroscience.

### 4. Navigating Uncertainty: Predictive Cognition and Altered States of Consciousness in Amos Tutuola's Works

Tutuola's literary works immerse the reader in liminal narrative environments in which conventional distinctions between waking consciousness, dreaming, and hallucination are blurred

[48]. From a behavioural neuroscience standpoint, such environments resemble altered states of consciousness associated with shifts in large-scale brain network dynamics, including reduced top-down modulation from prefrontal regions, increased limbic system reactivity, heightened autonomic arousal, and non-linear representations of time and space [49,50] as summarised in Table 1. Comparable neurophysiological patterns have been described during rapid eye movement sleep, dissociative states, trauma exposure, and conditions of sustained environmental stress [51]. Rather than portraying these states as dysfunctional, Tutuola's narratives normalise them as cognitively-navigable conditions, suggesting cultural familiarity with non-ordinary modes of conscious experience. This narrative framing contrasts with dominant Western neuropsychiatric models, which often interpret such states primarily as markers of pathology [52,53]. In many African contexts, experiences involving visions, spirit encounters, or altered perception are integrated into culturally-sanctioned explanatory systems rather than viewed as breakdowns of cognition. From a neurophysiological standpoint, this implies differences not in the underlying neural substrates themselves, but in how activity within fronto-limbic circuits, thalamo-cortical pathways, and stress-response systems is interpreted and regulated within cultural meaning structures [29–31]. This culturally patterned regulation of neural activity points toward a model of brain function in which perception and behaviour are shaped not solely by sensory input, but by prior expectations learned through social and cultural experience [29–31,54].

Contemporary neuroscience increasingly conceptualises cognition as predictive, with the brain continuously generating and updating internal models of the environment. These predictive processes rely on distributed neural systems, including the prefrontal cortex for expectation generation, the hippocampus for contextual memory, the amygdala for threat salience, and brainstem-hypothalamic circuits for autonomic regulation [55–58]. Tutuola's narrative worlds, marked by instability, abrupt transitions, and ambiguous causation, mirror environments in which predictive accuracy is challenged and uncertainty is high, requiring continuous physiological and behavioural adaptation [59,60]. Under conditions of sustained uncertainty, predictive cognition may recruit alternative modes of processing, creating a functional bridge between environmental instability and altered states of consciousness [61,62].

Altered states of consciousness such as dreaming, spirit possession, and liminal journeys recur throughout Tutuola's work as meaningful modes of perception and knowledge acquisition [63]. Neurophysiologically, such states may involve altered connectivity within the default mode network, shifts in sensory gating, and modulation of neuromodulatory systems including dopaminergic and noradrenergic pathways [64]. Cultural neuroscience suggests that belief systems and social norms influence how these neural states are appraised, regulated, and behaviourally expressed, shaping whether they are experienced as threatening, informative, or socially valued [29,30]. Importantly, culturally shaped appraisals of neural states are operationalised through behaviour, guiding actions that regulate arousal, manage uncertainty, and stabilise cognitive processing [65]. Within Tutuola's narratives, predictive cognition is exercised through vigilance, ritual practice, and interpretive flexibility. These behaviours can be understood as mechanisms that stabilise neural and physiological responses to uncertainty by modulating stress reactivity, attentional focus, and emotional regulation. Survival is achieved not by eliminating unpredictability, but by aligning cognitive expectations with environmental volatility, a strategy that contrasts with Western models emphasising control and predictability [66].

Overall, these narrative insights have important implications for clinical neuroscience and mental health practice as summarised in Table 1. First, they highlight the need to distinguish culturally-normative patterns of neural activation from pathological dysfunction. Altered fronto-limbic dynamics, heightened amygdala responsiveness, or dissociative experiences may reflect adaptive physiological responses shaped by cultural meaning systems, rather than indicators of psychiatric disorder [65]. Second, culturally-shaped predictive models influence how patients perceive symptoms, assign salience to internal experiences, and regulate autonomic and emotional responses [29,30]. Clinical assessments that fail to consider these factors risk misinterpreting culturally-

mediated neurophysiological states as pathology. Integrating culturally-informed narratives into clinical evaluation may improve the interpretation of neural-behavioural relationships and enhance diagnostic accuracy. Finally, these perspectives support the development of interventions that work with rather than against culturally-embedded brain-behaviour dynamics. Therapeutic approaches that engage narrative meaning, ritual practices, and culturally-grounded emotion regulation strategies may more effectively modulate neural circuits involved in stress, prediction, and affective control. Such alignment between cultural cognition, brain physiology, and clinical practice has the potential to improve treatment outcomes and promote ecologically-valid models of mental health in African contexts.

## 5. Fear Learning, Threat Processing, and Emotional Regulation in Tutuola's Narratives

Emotion regulation and fear-learning are central domains within behavioural neuroscience, mediated by interconnected neural circuits that detect threat, assign emotional salience, and guide adaptive behaviour [67–69]. In narrative contexts, these processes are symbolically-rehearsed through encounters with danger, uncertainty, and moral consequence, allowing individuals to simulate fear responses and regulatory strategies in the absence of direct exposure. Within Tutuola's narratives, protagonists repeatedly confront hostile environments populated by spirits, monsters, and unpredictable forces. Fear is not portrayed as a maladaptive or pathological response but as an adaptive signal that promotes vigilance, emotional restraint, and culturally appropriate action. Survival is rarely achieved through physical dominance; instead, it depends on behavioural flexibility, ritual competence, and social connectedness. These narrative patterns align closely with contemporary models of fear learning that emphasise context sensitivity and adaptive modulation of emotional responses [70].

The amygdala in humans and other vertebrates plays a central role in detecting biologically-relevant threats and assigning emotional salience to stimuli [71]. In Tutuola's stories, threats are often sudden and ambiguous, eliciting rapid fear responses that demand immediate behavioural adjustment. Such narrative depictions parallel amygdala-mediated fear conditioning, in which repeated exposure to danger strengthens associations between environmental cues and emotional responses [72]. Importantly, fear in these narratives is not indiscriminate; it is selectively engaged in response to culturally-meaningful signals, reinforcing the role of learned expectations in threat appraisal. Effective fear-learning depends on contextual encoding, a process strongly associated with hippocampal function [73]. Tutuola's narratives repeatedly emphasise learning from prior encounters, with characters modifying future behaviour based on remembered outcomes of earlier actions. Dangerous locations, specific entities, or moral transgressions acquire contextual significance, shaping anticipatory responses. This mirrors hippocampus-dependent learning in which contextual memory modulates fear expression, supporting adaptive navigation of complex and unpredictable environments [74,75].

The prefrontal cortex is critical for regulating emotional responses, evaluating consequences, and selecting context-appropriate behaviours [76]. In Tutuola's work, survival frequently hinges on restraint, humility, and adherence to ritual or communal norms rather than impulsive action. These narrative elements reflect top-down regulatory processes whereby prefrontal systems modulate limbic reactivity, allowing fear to guide behaviour without overwhelming cognitive control. Failures of such regulation often depicted as arrogance or disregard for social norms are consistently associated with heightened threat and negative outcomes.

Fear responses in Tutuola's narratives are further shaped by stress-responsive systems, including autonomic and neuroendocrine pathways that support rapid mobilisation under threat. Characters frequently alternate between behavioural inhibition, escape, and strategic engagement, reflecting flexible coping strategies rather than rigid fear responses. Such flexibility is consistent with adaptive stress modulation, enabling survival in environments characterised by chronic uncertainty.

The fear-learning dynamics depicted in Tutuola's narratives have clear relevance for clinical models of anxiety and trauma-related disorders as summarised in Table 2. In clinical contexts, dysregulations within amygdala-hippocampal-prefrontal circuits are associated with exaggerated threat perception, impaired contextual discrimination, and diminished top-down control, as observed in anxiety disorders and post-traumatic stress disorder. Tutuola's narratives, however, model fear as a culturally-regulated and context-sensitive process, suggesting that heightened threat sensitivity does not inevitably lead to pathology. Importantly, fear in these narratives is embedded within a moral and spiritual ecology. Threats often arise as consequences of transgression, greed, or social violation, while humility, compliance, and respect for communal norms promote safety. This narrative structure resembles a culturally-embedded form of operant conditioning, in which behaviour is shaped through meaningful consequences rather than abstract instruction. Clinically, this perspective underscores the importance of distinguishing maladaptive fear responses from culturally normative expressions of vigilance and stress. It also highlights the potential value of incorporating culturally-grounded narratives, moral frameworks, and meaning systems into the assessment and treatment of anxiety and trauma in African contexts.

**Table 1.** Narrative Features in Tutuola's Works and Their Behavioural Neuroscience Correlates.

Narrative Feature	Behavioural / Cognitive Function	Key Brain Regions & Physiological Processes	Clinical / Translational Implications
Liminal (dreams, encounters, reality)	states Altered spirit consciousness; blurred perceptual flexibility	Reduced prefrontal executive control; altered default mode network connectivity; thalamo-cortical modulation; REM-like neural dynamics	Helps distinguish culturally normative altered states from psychosis; reduces risk of over-pathologisation
Fluid boundaries between material and spiritual realms	Holistic meaning-making; causal reasoning	Integration across cortices; limbic-cortical interaction; symbolic processing networks	Encourages culturally sensitive interpretation of belief-driven experiences in mental health assessments
Heightened threat and danger motifs	Fear learning; threat appraisal	Amygdala activation; hippocampal contextual memory; hypothalamic-pituitary-adrenal (HPA) axis engagement	Supports contextualised understanding of anxiety and stress responses shaped by environment and culture
Non-linear temporality abrupt transitions	Predictive and cognition uncertainty	Prefrontal cortex (prediction updating); hippocampus (contextual mapping); noradrenergic modulation	Informs models of adaptive cognition in unstable environments; stress uncertainty as navigable rather than pathological
Rituals and symbolic practices	Emotional regulation; behavioural stabilisation	Modulation of limbic activity; autonomic nervous system regulation; down cortical control	Highlights therapeutic potential of culturally grounded rituals in stress and trauma regulation

Narrative Feature	Behavioural / Cognitive Function	Key Brain Regions & Physiological Processes	Clinical / Translational Implications
Shape-shifting fluid selfhood	Relational and identity; flexible self-representation	Default mode network; medial prefrontal cortex; social cognition circuits	Challenges rigid Western in psychopathology; supports relational approaches to identity and self-concept
Communal ethics and interdependence	Moral learning; social cognition	Prefrontal-temporal networks; empathy and norm-processing circuits	Enhances culturally appropriate moral reasoning frameworks in clinical and behavioural assessment
Narrative repetition and transmission	Memory oral consolidation; learning	Hippocampus-dependent memory encoding; emotional salience tagging	Supports use of narrative-based interventions for psychoeducation and therapy

**Table 2.** Clinical Implications of Fear Learning and Emotional Regulation in Tutuola's Narratives.

Neural System / Brain Region	Fear / Emotional Function	Clinical Correlate (Anxiety & Trauma)	Culturally Informed Interpretation & Implications
Amygdala	Rapid threat detection; emotional salience assignment	Hypervigilance, exaggerated fear responses, symptoms	Heightened fear responses may reflect adaptive vigilance shaped by culturally meaningful threat cues rather than pathological anxiety
Hippocampus	Contextual memory; fear discrimination	Overgeneralisation of learning; fear; intrusive memories (PTSD)	Narrative-based contextual situation-specific; cultural narratives may aid contextual reprocessing in therapy
Prefrontal Cortex (vmPFC, dlPFC)	Top-down emotional regulation; moral evaluation	Impaired fear inhibition; poor emotion regulation	Ritual restraint and moral reasoning in narratives model culturally grounded regulatory strategies that can support emotional control
HPA Axis / Stress Response Systems	Physiological arousal; stress adaptation	Chronic stress, anxiety disorders, trauma-related dysregulation	Stress responses framed as meaningful and survivable reduce pathological interpretations of arousal

Neural System / Brain Region	Fear / Emotional Function	Clinical Correlate (Anxiety & Trauma)	Culturally Informed Interpretation & Implications
Default Mode Network (DMN)	Self-referential processing; meaning-making	Rumination; dissociative symptoms	Narrative meaning-making may stabilise self-representation during stress and trauma
Autonomic Nervous System	Fight-flight-freeze responses	Somatic symptoms	Cultural practices (rituals, anxiety storytelling) may modulate autonomic arousal and support recovery
Operant Learning Systems	Behavioural reinforcement	Avoidance behaviours; maladaptive coping	Moral consequence-based learning offers an alternative to fear-avoidance models, supporting adaptive behavioural change
Social Cognition Networks	Norm learning; communal regulation	Social withdrawal; impaired trust	Communal ethics promote collective regulation of fear, offering protective effects against isolation in trauma

## 6. Moral Cognition, Social Learning, and Communal Behaviour in Tutuola's Narratives

Moral cognition and social learning are central to behavioural adaptation, enabling individuals to internalise norms, anticipate social consequences, and regulate behaviour within group contexts [77,78]. In behavioural neuroscience, moral judgement is understood as an integrative process involving emotional salience, social evaluation, and outcome prediction [79]. Whereas many Western narrative traditions frame morality in individualistic terms, emphasising personal agency and internal moral conflict, Yoruba-influenced narratives foreground communal responsibility, relational ethics, and situational morality. Within this communal moral framework, Tutuola's narratives consistently portray moral outcomes as emerging from interactions among individuals, communities, ancestors, and spiritual forces. Moral transgressions are rarely isolated personal failures; instead, they disrupt communal balance/social equilibrium and invite corrective consequences [80]. Characters who violate communal norms or spiritual obligations encounter danger, punishment, or loss, while those who demonstrate humility, reciprocity, and respect for social order are rewarded with safety or success. These recurring patterns function as culturally-embedded cognitive templates for moral reasoning, reinforcing behaviours that sustain social cohesion [80,81].

At the neural level, such moral learning is supported by systems involved in emotional valuation, conflict monitoring, perspective-taking, and reinforcement learning. The amygdala and ventromedial prefrontal cortex play critical roles in integrating emotional value with decision-making and moral judgement [82,83]. In Tutuola's narratives, moral choices are consistently evaluated in terms of their consequences for communal harmony rather than individual gain [38]. This emphasis mirrors ventromedial prefrontal cortex-mediated valuation processes, in which behavioural options are assessed based on anticipated emotional and social outcomes [82,83].

The narrative reinforcement of humility and restraint reflects culturally-shaped valuation systems that prioritise collective well-being. The anterior cingulate cortex (ACC) is the key brain region for modulating cognitive processes including the monitoring of conflict, detection of norm

violations, and signalling of the need for behavioural adjustment [84]. Tutuola's stories frequently depict moments of moral tension in which characters face competing desires or transgress social expectations. These narrative conflicts align with ACC-related processes that register moral error and motivate corrective action [85,86]. Fear, discomfort, or misfortune following moral violations can be interpreted as narrative analogues of error signals that promote learning and behavioural recalibration. Emotionally-salient outcomes such as fear, relief, punishment, or reward assign value to moral choices and shape future behaviour. Through repeated exposure to morally-charged scenarios, individuals learn to anticipate the consequences of actions within a culturally-meaningful framework, strengthening the internalisation of social norms [87,88]. Other regions of the brain including the temporoparietal junction are also involved in the modulation of cognitive processes and moral judgments.

The temporoparietal junction (TPJ) is important and central to the theory of mind, perspective-taking, and the attribution of intentions to others [89,90]. In Tutuola's narratives, moral evaluation often depends on understanding relational obligations not only to other individuals, but also to ancestors, spirits, and the wider community. This expanded social field requires flexible perspective-taking, aligning with TPJ-mediated processes that support social cognition beyond narrow individualistic frameworks. Moral learning in Tutuola's narratives is reinforced through emotionally salient outcomes rather than formal legal sanctions [91]. Dopaminergic reward systems, including pathways involving the ventral striatum, are central to reinforcement learning and reward prediction [92,93].

In the narratives, adherence to communal norms is associated with safety, success, or protection, while moral violations increase threat and punishment. This pattern reflects a culturally-embedded form of operant conditioning, in which moral behaviour is shaped through narrative consequence, reinforcing adaptive social conduct. By repeatedly simulating morally charged scenarios, Tutuola's storytelling enables vicarious learning of social rules without direct personal risk. This mechanism aligns with social learning theory and predictive reward models in neuroscience [92,93], offering an evolutionarily efficient means of regulating behaviour in communal societies. Such narrative-based moral conditioning could have played a crucial role in maintaining social order in contexts predating formalised legal systems.

**Table 3.** Clinical and Social Implications of Moral Cognition in Tutuola's Narratives.

Brain Region / System	Moral-Cognitive Function	Clinical / Social Correlate	Culturally Informed Implications
Ventromedial Prefrontal Cortex (vmPFC)	Moral valuation; Impaired integration of emotion and outcome	Impaired judgement; and antisocial making	risky or rather than decision-valuation assessment
Anterior Cingulate Cortex (ACC)	Detection of norm violations; monitoring	Guilt impaired processing	dysregulation; error
Temporoparietal Junction (TPJ)	Perspective-taking; theory of mind	Social deficits; empathy	cognition Highlights relational and communal dimensions of moral reasoning

Brain Region / System		Moral-Cognitive Function	Clinical / Social Correlate	Culturally Informed Implications
Reward (Ventral Dopaminergic Pathways)	Circuitry (Striatum, Striatum, Dopaminergic)	Reinforcement learning; prediction	Maladaptive reward processing; impulsivity	Moral behaviour reinforced through social and spiritual consequence, not only material reward
Amygdala-Limbic Interaction		Emotional salience of moral outcomes	Heightened fear or avoidance behaviours	Fear responses may encode moral learning rather than anxiety disorder
Social Networks	Learning	Internalisation of norms through observation	Social conformity or withdrawal	Narrative-based learning supports moral acquisition without direct punishment

## 7. Orality, Memory Encoding, and Neural Representation in Tutuola's Narratives

Tutuola's distinctive narrative style characterised by repetition, rhythm, and episodic progression reflects the cognitive demands and affordances of oral storytelling traditions. From a behavioural neuroscience standpoint, orality represents a memory-optimised mode of information transmission, which is particularly suited to societies in which knowledge is preserved and communicated collectively. Rather than signalling stylistic limitation, the repetitive and conventional structure of Tutuola's narratives can be understood as a neurocognitively-efficient strategy for encoding, retaining, and transmitting culturally-salient information across generations [94,95].

Neuroscientific evidence indicates that repetition and rhythmic patterning enhance synaptic plasticity and long-term memory consolidation by repeatedly-activating overlapping neural circuits [96]. Auditory processing regions within the superior temporal cortex support the perception of rhythm and patterned language, while hippocampal networks facilitate the consolidation of episodic and contextual memory [97,98]. Emotional salience further strengthens memory encoding through interactions between the hippocampus and limbic structures, particularly the amygdala [99]. In Tutuola's narratives, emotionally-charged repetition often tied to danger, moral consequence; or survival likely amplifies these memory processes, reinforcing recall and learning.

Beyond memory consolidation, oral storytelling engages large-scale brain networks involved in internal representation and meaning-making. The default mode network (DMN), which supports autobiographical memory, imagination, and narrative integration, is particularly active during story comprehension and recall [100]. Tutuola's episodic structure, recurring motifs, and cyclical narrative progression align with DMN-mediated processes that organise experience into coherent mental models. Through repeated narrative exposure, listeners or readers are encouraged to integrate personal experience with shared cultural memory, strengthening collective identity and moral continuity.

Importantly, the oral features of Tutuola's storytelling also serve a regulatory function. By embedding moral lessons, survival strategies, and social norms within memorable narrative forms, storytelling facilitates implicit learning without formal instruction [101,102]. This process parallels neural mechanisms of associative learning, in which repeated pairing of narrative cues with emotional or moral outcomes strengthens behavioural expectations. In communal settings, such narrative encoding supports coordinated social behaviour by ensuring that culturally important knowledge is widely shared and reliably remembered [101].

The memory-oriented features of oral narrative traditions have important implications for clinical neuroscience and mental health practice. First, they highlight the role of repetition, rhythm,

and emotional salience in supporting memory retention, suggesting potential applications in cognitive rehabilitation, psychoeducation, and trauma-informed care. Narrative-based interventions that incorporate rhythmic speech, repetition, and culturally familiar storytelling structures may enhance engagement and recall, particularly in populations with limited literacy or memory impairment. Second, recognising orality as a neurocognitively adaptive system cautions against misinterpreting repetitive or non-linear narrative styles as indicators of cognitive deficit or thought disorder. In clinical assessments, especially within African contexts, storytelling patterns rooted in oral tradition may reflect normative memory and communication strategies rather than pathology. Appreciating these patterns can improve diagnostic accuracy and reduce cultural bias in neuropsychological evaluation. Finally, the collective nature of oral memory transmission underscores the importance of social context in cognitive health. By engaging shared memory networks and reinforcing communal identity, storytelling may buffer against cognitive decline and emotional distress. Tutuola's narratives thus illustrate how culturally embedded modes of memory encoding and representation can support resilience, learning, and social cohesion, offering valuable insights for culturally informed models of cognition and mental health.

## 8. Cultural Belief Systems: Implications for Behavioural and Cultural Neuroscience in Africa

One of the most significant contributions of Tutuola's work to behavioural neuroscience lies in its implications for the interpretation of mental health and psychopathology. Experiences that may resemble hallucinations or delusional ideation within Western psychiatric frameworks are presented in his narratives as normative spiritual encounters embedded within culturally shared belief systems. This narrative framing aligns with growing evidence that psychiatric phenomena exist along cultural continua rather than as universally defined categories. Diagnostic frameworks that fail to account for culturally grounded meaning systems risk misclassification, inappropriate labelling, and ineffective intervention. Tutuola's work therefore underscores the necessity of culturally informed neuropsychiatric assessment, particularly within African populations where spiritual causality and communal worldviews remain influential.

Beyond clinical interpretation, reframing Tutuola's narratives as an indigenous cognitive archive carries important implications for behavioural neuroscience research in African contexts. Incorporating indigenous narrative frameworks into research design can enhance ecological validity by aligning experimental paradigms with culturally relevant models of cognition and behaviour. Such alignment has the potential to refine interpretations of emotional expression, fear responses, moral reasoning, and social behaviour, which may otherwise be misunderstood when assessed using culturally incongruent tools.

In mental health research, culturally grounded narratives provide a valuable resource for developing diagnostic approaches that distinguish culturally normative experiences from clinically significant dysfunction. Integrating narrative context into assessment processes may reduce the risk of treating as pathological culturally sanctioned beliefs or practices. More broadly, engagement with indigenous storytelling traditions contributes to ongoing efforts to decolonise behavioural neuroscience by expanding its theoretical and methodological foundations beyond predominantly Western epistemologies.

The integration of indigenous narratives into behavioural neuroscience carries several practical implications. First, it promotes ecological validity, ensuring that research paradigms reflect lived cognitive and emotional realities. Second, it supports cultural calibration, whereby behavioural tasks and experimental stimuli account for spiritual beliefs, communal ethics, and relational modes of reasoning. Third, it informs mental health diagnostics, encouraging cultural interpretation to precede pathological labelling. Finally, it has implications for education and training, advocating for neuroscience curricula in Africa that incorporate indigenous cognitive models alongside contemporary neuroscientific theory. In this way, Tutuola's work serves as a conceptual bridge

between scientific inquiry and cultural understanding, highlighting the inseparability of brain, behaviour, and belief.

## 9. Limitations and Future Directions

This review adopts a theoretical and interpretive approach and does not seek to establish direct neural localisation or provide empirical validation of the proposed frameworks. While behavioural and cultural neuroscience concepts are used to interpret narrative structures and themes, the arguments advanced here remain inferential. Consequently, the findings should be understood as hypothesis-generating rather than confirmatory.

Future research could address these limitations by empirically examining how engagement with indigenous narrative forms influences emotional regulation, moral reasoning, fear learning, and threat processing. Such investigations may employ culturally adapted behavioural paradigms, psychophysiological measures, and neuroimaging techniques that are sensitive to sociocultural context. Longitudinal and experimental designs could further elucidate how repeated exposure to culturally grounded narratives shapes cognitive development and behavioural adaptation across the lifespan.

In addition, comparative studies across diverse African narrative traditions would help clarify both shared and culture-specific cognitive patterns, contributing to more nuanced models of culturally embedded cognition. Integrating interdisciplinary methods from neuroscience, psychology, anthropology, and literary studies may further strengthen theoretical integration and empirical rigour. Collectively, these approaches offer a pathway toward developing ecologically valid and culturally inclusive frameworks for understanding brain-behaviour relationships in African contexts.

## 10. Conclusion

Amos Tutuola's narratives offer more than literary innovation; they provide culturally grounded models of cognition, emotion, and behaviour rooted in Yoruba-Nigerian worldview. When interpreted through the lens of behavioural and cultural neuroscience, his work emerges as an indigenous cognitive archive that challenges universalist assumptions and enriches theoretical accounts of the mind. Integrating such narrative frameworks into neuroscience research holds promise for advancing culturally informed, ecologically valid understandings of behaviour and cognition in Nigeria and beyond.

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