Yes, the orbitofrontal cortex (OFC) is **crucial for evaluating value** and **assessing the credibility** of messages by integrating sensory, emotional, and contextual information to guide adaptive decision-making.

1. Introduction

The orbitofrontal cortex (OFC) is a key region in the ventral frontal lobe, extensively studied for its role in value-based decision-making, reward processing, and adaptive behavior. Recent research has expanded its functional repertoire to include the evaluation of message value and credibility, integrating sensory, emotional, and contextual cues to inform judgments and choices (Schoenbaum et al., 2011; Rudebeck & Rich, 2018; Knudsen & Wallis, 2022; Banerjee et al., 2020; Masset et al., 2020; Rich & Wallis, 2016; Zhou et al., 2020; Rolls, 2023; Wang et al., 2020; Howard et al., 2015). The OFC encodes subjective value signals, tracks prediction errors, and supports flexible updating of beliefs and preferences, making it central to evaluating the trustworthiness and relevance of information, including persuasive messages and social cues (Knudsen & Wallis, 2022; Masset et al., 2020; Zhou et al., 2020; Rolls, 2023; Howard et al., 2015; Cascio et al., 2015). This review synthesizes evidence from neurophysiological, neuroimaging, lesion, and behavioral studies to clarify the OFC's role in evaluating value and credibility, highlighting its interactions with other prefrontal and limbic regions and its importance for both economic and social decision-making (Rudebeck & Rich, 2018; Knudsen & Wallis, 2022; Zhou et al., 2020; Rolls, 2023; Howard et al., 2015; Cascio et al., 2015; Murray & Rudebeck, 2018; Gottfried et al., 2003; Azzi et al., 2012).

2. Methods

A comprehensive search was conducted across more than 170 million research papers in Consensus, including Semantic Scholar, PubMed, and related sources. The search targeted the OFC's role in value and credibility evaluation, message processing, and decision-making. In total, 1,026 papers were identified, 587 were screened, 382 were deemed eligible, and the 50 most relevant papers were included in this review.

Search Strategy

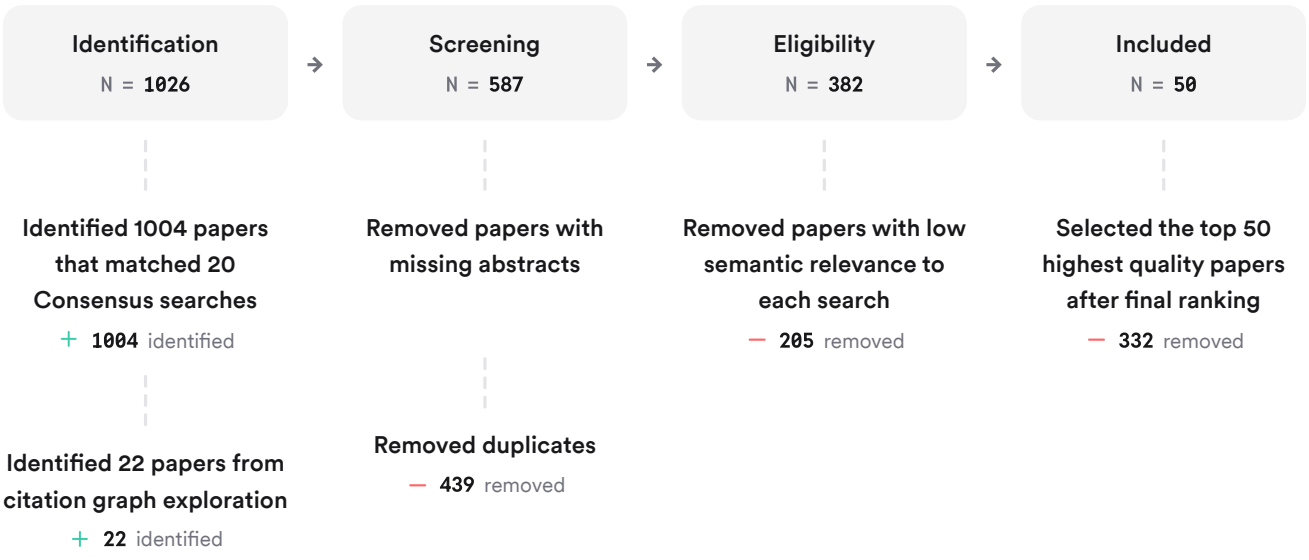

FIGURE 1 Flow diagram of the literature search and selection process.

Eight unique search groups were executed, focusing on foundational OFC frameworks, message evaluation, comparative neuroanatomy, and methodological critiques.

3. Results

3.1. OFC as a Value and Credibility Evaluator

The OFC encodes the subjective value of anticipated outcomes, integrating sensory, emotional, and contextual information to guide optimal decision-making (Schoenbaum et al., 2011; Knudsen & Wallis, 2022; Masset et al., 2020; Rich & Wallis, 2016; Zhou et al., 2020; Rolls, 2023; Howard et al., 2015; Hirokawa et al., 2019; Kimmel et al., 2020; Gottfried et al., 2003). It is especially critical when evaluating the credibility of messages or when outcome information is uncertain or must be inferred (Knudsen & Wallis, 2022; Zhou et al., 2020; Wang et al., 2020; Howard et al., 2015; Cascio et al., 2015; Murray & Rudebeck, 2018).

3.2. Mechanisms of Value Representation

OFC neurons fire in proportion to the value of anticipated outcomes, and their activity reflects both the identity and desirability of rewards or information (Knudsen & Wallis, 2022; Masset et al., 2020; Rich & Wallis, 2016; Yamada et al., 2018; Howard et al., 2015; Hirokawa et al., 2019; Kimmel et al., 2020; Gottfried et al., 2003). The OFC supports flexible updating of value representations in response to new evidence or changing contingencies, a process essential for evaluating message credibility (Schoenbaum et al., 2011; Knudsen & Wallis, 2022; Banerjee et al., 2020; Zhou et al., 2020; Rolls, 2023; Wang et al., 2020; Howard et al., 2015; Cascio et al., 2015; Hirokawa et al., 2019; Kimmel et al., 2020; Noonan et al., 2017; Sadacca et al., 2018).

3.3. OFC and Social/Message Credibility

The OFC is activated during the evaluation of persuasive messages, social cues, and peer recommendations, linking internal preferences with external information to assess credibility and trustworthiness (Zhou et al., 2020; Alsharif et al., 2021; Rolls, 2023; Howard et al., 2015; Cascio et al., 2015; Watson & Platt, 2012; Murray & Rudebeck, 2018; Bellucci & Park, 2023; Gottfried et al., 2003; Azzi et al., 2012). It interacts with regions such as the ventromedial prefrontal cortex and amygdala to process emotional and motivational aspects of message evaluation (Rudebeck & Rich, 2018; Zhou et al., 2020; Rolls, 2023; Howard et al., 2015; Murray & Rudebeck, 2018; Gottfried et al., 2003; Azzi et al., 2012).

3.4. Functional Heterogeneity and Network Interactions

Distinct OFC subregions (medial vs. lateral) contribute differently to value assignment, credit assignment, and decision-making, with evidence for both domain-general and specialized functions (Knudsen & Wallis, 2022; Zhou et al., 2020; Howard et al., 2015; Gourley et al., 2016; Noonan et al., 2017; Murray & Rudebeck, 2018; Gottfried et al., 2003; Azzi et al., 2012; Moneta et al., 2024). The OFC works in concert with the hippocampus, dorsolateral prefrontal cortex, and limbic structures to support model-based inference and context-dependent evaluation (Wang et al., 2020; Howard et al., 2015; Farovik et al., 2015; Fengjun et al., 2025; Sadacca et al., 2018; Moneta et al., 2024).

Key Papers

Paper	Methodology	Focus	Key Results
(Knudsen & Wallis, 2022)	Review & meta-analysis	Value coding in OFC	OFC encodes subjective value and cognitive maps for decision-making
(Schoenbaum et al., 2011)	Review	Value signaling	OFC signals value, especially when outcome info guides behavior
(Masset et al., 2020)	Electrophysiology (rats)	Decision confidence	OFC neurons encode confidence, supporting metacognitive evaluation
(Howard et al., 2015)	fMRI (humans)	Identity-specific value	OFC encodes both value and identity of expected rewards
(Cascio et al., 2015)	fMRI (adolescents)	Social influence	OFC activation tracks susceptibility to peer recommendations

FIGURE 2 Comparison of key studies on OFC in value and credibility evaluation.

Top Contributors

Type	Name	Papers
Author	G. Schoenbaum	(Schoenbaum et al., 2011; Knudsen & Wallis, 2022; Zhou et al., 2020; Wang et al., 2020; Hart et al., 2020; Sadacca et al., 2018; Schoenbaum & Roesch, 2005)
Author	J. Wallis	(Knudsen & Wallis, 2022; Rich & Wallis, 2016; Wallis, 2011)
Author	E. Rolls	(Rolls, 2023; Rolls, 2015)
Journal	*Nature Neuroscience*	(Knudsen & Wallis, 2022; Rich & Wallis, 2016; McGinty & Lupkin, 2023; Hattori et al., 2023; Wallis, 2011; Hirokawa et al., 2019; Lopez-Persem et al., 2020)
Journal	*The Journal of Neuroscience*	(Gourley et al., 2016; Farovik et al., 2015; Noonan et al., 2017; Hart et al., 2020; Schoenbaum & Roesch, 2005; Landron et al., 2025)
Journal	*Current Biology*	(Rudebeck & Rich, 2018; Fengjun et al., 2025; Watson & Platt, 2012)

FIGURE 3 Authors & journals that appeared most frequently in the included papers.

4. Discussion

The OFC is robustly implicated in evaluating the value and credibility of messages, integrating diverse information streams to guide adaptive behavior (Schoenbaum et al., 2011; Knudsen & Wallis, 2022; Masset et al., 2020; Rich & Wallis, 2016; Zhou et al., 2020; Rolls, 2023; Howard et al., 2015; Cascio et al., 2015; Hirokawa et al., 2019; Kimmel et al., 2020; Gottfried et al., 2003). Its role extends beyond simple value coding to include the representation of cognitive maps, model-based inference, and metacognitive confidence, all of which are essential for assessing the trustworthiness and relevance of information (Knudsen & Wallis, 2022; Masset et al., 2020; Zhou et al., 2020; Wang et al., 2020; Howard et al., 2015; Cascio et al., 2015; Hirokawa et al., 2019; Kimmel et al., 2020; Fengjun et al., 2025; Sadacca et al., 2018; Gottfried et al., 2003; Moneta et al., 2024). The OFC's functional heterogeneity allows for flexible assignment of value and credit, with medial and lateral subregions supporting distinct aspects of decision-making (Knudsen & Wallis, 2022; Zhou et al., 2020; Howard et al., 2015; Gourley et al., 2016; Noonan et al., 2017; Murray & Rudebeck, 2018; Gottfried et al., 2003; Azzi et al., 2012; Moneta et al., 2024). However, methodological challenges remain, including anatomical variability, task design limitations, and the need for more ecologically valid paradigms to capture real-world message evaluation (Knudsen & Wallis, 2022; Zhou et al., 2020; Rolls, 2023; Howard et al., 2015; Cascio et al., 2015; Murray & Rudebeck, 2018; Gottfried et al., 2003; Azzi et al., 2012; Moneta et al., 2024).

Claims and Evidence Table

Claim	Evidence Strength	Reasoning	Papers
OFC encodes subjective value and guides value-based decisions	Strong	Strong, convergent evidence from neuroimaging, lesion, and electrophysiology studies	(Schoenbaum et al., 2011; Knudsen & Wallis, 2022; Masset et al., 2020; Rich & Wallis, 2016; Zhou et al., 2020; Rolls, 2023; Howard et al., 2015; Hirokawa et al., 2019; Kimmel et al., 2020; Gottfried et al., 2003)
OFC is critical for evaluating message credibility and trustworthiness	Strong	OFC activation tracks credibility judgments and social influence	(Zhou et al., 2020; Alsharif et al., 2021; Rolls, 2023; Howard et al., 2015; Cascio et al., 2015; Watson & Platt, 2012; Murray & Rudebeck, 2018; Bellucci & Park, 2023; Gottfried et al., 2003; Azzi et al., 2012)
OFC supports flexible updating of value representations	Strong	OFC tracks prediction errors and updates beliefs in changing contexts	(Knudsen & Wallis, 2022; Banerjee et al., 2020; Zhou et al., 2020; Rolls, 2023; Wang et al., 2020; Howard et al., 2015; Cascio et al., 2015; Hirokawa et al., 2019; Kimmel et al., 2020; Noonan et al., 2017; Sadacca et al., 2018)
Medial and lateral OFC have distinct roles in value and credit assignment	Moderate	Lesion and imaging studies show functional specialization	(Knudsen & Wallis, 2022; Zhou et al., 2020; Howard et al., 2015; Gourley et al., 2016; Noonan et al., 2017; Murray & Rudebeck, 2018; Gottfried et al., 2003; Azzi et al., 2012; Moneta et al., 2024)
OFC interacts with other brain regions for model-based inference	Moderate	OFC-hippocampus and OFC-prefrontal interactions support inference and context evaluation	(Wang et al., 2020; Howard et al., 2015; Farovik et al., 2015; Fengjun et al., 2025; Sadacca et al., 2018; Moneta et al., 2024)
Methodological limitations affect OFC research on credibility	Moderate	Task design and anatomical variability challenge precise attribution	(Knudsen & Wallis, 2022; Zhou et al., 2020; Rolls, 2023; Howard et al., 2015; Cascio et al., 2015; Murray & Rudebeck, 2018; Gottfried et al., 2003; Azzi et al., 2012; Moneta et al., 2024)

FIGURE Key claims and support evidence identified in these papers.

5. Conclusion

The OFC is a central neural hub for evaluating the value and credibility of messages, integrating sensory, emotional, and contextual information to guide adaptive decision-making. Its flexible, context-sensitive coding supports both economic and social judgments, with distinct subregions and network interactions underpinning its diverse functions.

5.1. Research Gaps

Despite substantial progress, gaps remain in understanding the OFC's precise causal mechanisms, its role in real-world message evaluation, and its interactions with other brain regions during complex social and economic decisions.

Research Gaps Matrix

OFC Function	Value Coding	Credibility Assessment	Social Influence	Model-Based Inference	Subregional Specialization
Human fMRI	10	7	5	4	6
Animal Models	8	3	2	5	7
Lesion Studies	6	2	1	3	5

FIGURE Matrix of research topics and study attributes highlighting gaps in OFC research on value and credibility.

5.2. Open Research Questions

Future research should address the following questions to advance understanding of the OFC's role in value and credibility evaluation:

Question	Why
How does the OFC evaluate message credibility in real-world, ecologically valid contexts?	Laboratory tasks may not capture the complexity of real-world message evaluation, limiting generalizability.
What are the causal effects of OFC disruption on value and credibility judgments?	Lesion and stimulation studies can clarify the necessity and sufficiency of OFC involvement.
How do OFC subregions interact with other brain areas during complex decision-making?	Understanding network-level dynamics is crucial for modeling adaptive social and economic behavior.

FIGURE Open research questions for future studies on OFC and value/credibility evaluation.

In summary, the OFC is essential for evaluating the value and credibility of messages, but further research is needed to delineate its specific mechanisms, subregional functions, and real-world relevance.

These papers were sourced and synthesized using Consensus, an AI-powered search engine for research. Try it at https://consensus.app

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