Yes, dopaminergic pathways are **central to motivating acceptance or rejection of new information** by modulating **information-seeking, salience, and the subjective value of knowledge**.

1. Introduction

Dopaminergic pathways, particularly those originating in the midbrain (e.g., the ventral tegmental area), play a crucial role in shaping a person's motivation to seek out, accept, or avoid new information. These pathways are not only involved in classic reward-seeking behaviors but also underlie curiosity, exploratory behavior, and the drive to reduce uncertainty—even when no immediate tangible reward is present (Kesner et al., 2022; Vellani et al., 2020; Wyart, 2020; Berke, 2018; Vellani et al., 2020; Gautham et al., 2024; Mohebi et al., 2019; Nour et al., 2018; Miendlarzewska et al., 2016; Kutlu et al., 2022; Schultz, 2015; Wise & Jordan, 2021; Kobayashi & Hsu, 2018; Westbrook & Braver, 2016; Kahnt & Schoenbaum, 2025; Duszkiewicz et al., 2019; Yee & Braver, 2018; Lerner et al., 2020; Lee et al., 2021; Marshall et al., 2016; Soares-Cunha et al., 2016; Salamone et al., 2016; Shin & Kim, 2019; Bogacz, 2019; Gruber & Ranganath, 2019; Van Lieshout et al., 2020; Shen et al., 2023; Ripollés et al., 2018; Akiti et al., 2021; Chakroun et al., 2019). Dopamine signals encode the salience and potential value of information, influencing whether individuals are motivated to approach (accept) or avoid (reject) new knowledge. Recent experimental and pharmacological studies show that enhancing dopamine function can alter the impact of emotional valence on information-seeking, making people more likely to seek information about both positive and negative outcomes (Vellani et al., 2020; Wyart, 2020; Vellani et al., 2020). Dopaminergic modulation also affects how much effort individuals are willing to invest in acquiring information, how they weigh uncertainty, and how they update beliefs in response to new evidence (Kesner et al., 2022; Vellani et al., 2020; Berke, 2018; Mohebi et al., 2019; Nour et al., 2018; Kutlu et al., 2022; Schultz, 2015; Wise & Jordan, 2021; Kobayashi & Hsu, 2018; Westbrook & Braver, 2016; Kahnt & Schoenbaum, 2025; Duszkiewicz et al., 2019; Yee & Braver, 2018; Lerner et al., 2020; Lee et al., 2021; Marshall et al., 2016; Soares-Cunha et al., 2016; Salamone et al., 2016; Shin & Kim, 2019; Bogacz, 2019; Gruber & Ranganath, 2019; Van Lieshout et al., 2020; Shen et al., 2023; Ripollés et al., 2018; Akiti et al., 2021; Chakroun et al., 2019). This review synthesizes the latest research on how dopaminergic pathways influence the motivation to accept or reject new information, integrating findings from neuroscience, psychology, and behavioral economics.

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 dopaminergic pathways, motivation, information-seeking, and decision-making. In total, 1,037 papers were identified, 762 were screened, 558 were deemed eligible, and the 50 most relevant papers were included in this review.

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Search Strategy

Identification N = 1037 → **Screening** N = 762 → **Eligibility** N = 558 → **Included** N = 50

Identification

Identified 1014 papers that matched 20 Consensus searches

+ 1014 identified

Identified 23 papers from citation graph exploration

+ 23 identified

Screening

Removed papers with missing abstracts

Removed duplicates

— 275 removed

Eligibility

Removed papers with low semantic relevance to each search

— 204 removed

Included

Selected the top 50 highest quality papers after final ranking

— 508 removed

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

Eight unique search groups were executed, focusing on foundational frameworks, mechanisms, pharmacological interventions, computational models, and critiques.

3. Results

3.1. Dopamine and Information-Seeking Motivation

Dopaminergic neurons in the midbrain signal the salience and potential importance of novel or uncertain stimuli, driving curiosity and information-seeking even in the absence of direct rewards (Kesner et al., 2022; Vellani et al., 2020; Wyart, 2020; Berke, 2018; Vellani et al., 2020; Shin & Kim, 2019; Gruber & Ranganath, 2019; Van Lieshout et al., 2020). These signals help determine whether new information is approached or avoided, and are modulated by both environmental uncertainty and individual differences in dopamine function (Kesner et al., 2022; Vellani et al., 2020; Wyart, 2020; Berke, 2018; Vellani et al., 2020; Shin & Kim, 2019; Gruber & Ranganath, 2019; Van Lieshout et al., 2020).

3.2. Valence, Effort, and Dopaminergic Modulation

Experimental studies show that dopamine enhances the motivation to seek information, particularly by reducing the impact of negative valence (bad news) on information-seeking (Vellani et al., 2020; Wyart, 2020; Vellani et al., 2020). For example, administration of L-DOPA (a dopamine precursor) makes people more likely to seek information about potential losses, not just gains, suggesting dopamine can override avoidance of negative information (Vellani et al., 2020; Wyart, 2020; Vellani et al., 2020). Dopamine also increases willingness to exert effort to obtain information (Westbrook & Braver, 2016; Salamone et al., 2016; Shin & Kim, 2019).

3.3. Dopamine, Salience, and Belief Updating

Dopaminergic pathways encode the subjective value and salience of information, influencing how new evidence is integrated into beliefs (Kesner et al., 2022; Nour et al., 2018; Kutlu et al., 2022; Schultz, 2015; Wise & Jordan, 2021; Kobayashi & Hsu, 2018; Kahnt & Schoenbaum, 2025; Duszkiewicz et al., 2019; Yee & Braver, 2018; Lerner et al., 2020; Lee et al., 2021; Marshall et al., 2016; Bogacz, 2019; Gruber & Ranganath, 2019; Van Lieshout et al., 2020; Ripollés et al., 2018; Akiti et al., 2021; Chakroun et al., 2019). Dopamine signals prediction errors—discrepancies between expected and actual outcomes—which drive learning and belief updating (Kesner et al., 2022; Nour et al., 2018; Kutlu et al., 2022; Schultz, 2015; Wise & Jordan, 2021; Kobayashi & Hsu, 2018; Kahnt & Schoenbaum, 2025; Duszkiewicz et al., 2019; Yee & Braver, 2018; Lerner et al., 2020; Lee et al., 2021; Marshall et al., 2016; Bogacz, 2019; Gruber & Ranganath, 2019; Van Lieshout et al., 2020; Ripollés et al., 2018; Akiti et al., 2021; Chakroun et al., 2019).

3.4. Circuit and Contextual Specificity

Different dopaminergic circuits (e.g., mesolimbic, nigrostriatal) and receptor subtypes (D1, D2) contribute to distinct aspects of motivation, salience, and information processing (Kesner et al., 2022; Berke, 2018; Mohebi et al., 2019; Kutlu et al., 2022; Schultz, 2015; Wise & Jordan, 2021; Kobayashi & Hsu, 2018; Westbrook & Braver, 2016; Kahnt & Schoenbaum, 2025; Duszkiewicz et al., 2019; Yee & Braver, 2018; Lerner et al., 2020; Lee et al., 2021; Marshall et al., 2016; Soares-Cunha et al., 2016; Salamone et al., 2016; Shin & Kim, 2019; Bogacz, 2019; Gruber & Ranganath, 2019; Van Lieshout et al., 2020; Shen et al., 2023; Ripollés et al., 2018; Akiti et al., 2021; Chakroun et al., 2019). Context, individual differences, and psychiatric conditions (e.g., Parkinson's disease, schizophrenia) can alter dopaminergic influence on information acceptance or avoidance (Vellani et al., 2020; Wyart, 2020; Vellani et al., 2020; Nour et al., 2018; Kutlu et al., 2022; Schultz, 2015; Wise & Jordan, 2021; Kobayashi & Hsu, 2018; Westbrook & Braver, 2016; Kahnt & Schoenbaum, 2025; Duszkiewicz et al., 2019; Yee & Braver, 2018; Lerner et al., 2020; Lee et al., 2021; Marshall et al., 2016; Soares-Cunha et al., 2016; Salamone et al., 2016; Shin & Kim, 2019; Bogacz, 2019; Gruber & Ranganath, 2019; Van Lieshout et al., 2020; Shen et al., 2023; Ripollés et al., 2018; Akiti et al., 2021; Chakroun et al., 2019).

Key Papers

Paper	Methodology	Focus	Key Results
(Vellani et al., 2020)	Pharmacological intervention (L-DOPA)	Dopamine and information-seeking	L-DOPA reduces avoidance of negative information, increases information-seeking about losses
(Kesner et al., 2022)	Review, neural circuit analysis	Dopamine and information-seeking	Dopaminergic neurons signal salience and uncertainty, drive curiosity and exploration
(Berke, 2018)	Theoretical review	Dopamine, learning, and motivation	Dopamine rapidly sculpts motivation and learning, influencing resource allocation for information-seeking
(Nour et al., 2018)	Human PET/fMRI	Dopamine and belief updating	Dopamine activity encodes belief updates, not just surprise, and predicts individual differences
(Westbrook & Braver, 2016)	Review	Dopamine and cognitive effort	Dopamine translates incentive information into cognitive motivation and effort for information-seeking

FIGURE 2 Comparison of key studies on dopaminergic pathways and information acceptance.

Top Contributors

Type	Name	Papers
Author	J. Berke	(Berke, 2018; Mohebi et al., 2019; Nour et al., 2018; Salamone et al., 2016)
Author	W. Schultz	(Schultz, 2015; Schultz, 2019)
Author	Valentina Vellani	(Vellani et al., 2020)
Journal	*Nature Neuroscience*	(Berke, 2018; Mohebi et al., 2019; Nour et al., 2018; Kutlu et al., 2022; Schultz, 2015; Schultz, 2019)
Journal	*eLife*	(Vellani et al., 2020; Wyart, 2020; Vellani et al., 2020; Bogacz, 2019; Chakroun et al., 2019)
Journal	*Neuron*	(Morrens et al., 2020; Pignatelli & Bonci, 2015; Westbrook & Braver, 2016; Lee et al., 2021; Yang et al., 2018; Lutas et al., 2019; Soares-Cunha et al., 2016; Chantranupong et al., 2023)

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

4. Discussion

The evidence strongly supports that dopaminergic pathways are central to motivating the acceptance or rejection of new information. Dopamine signals the salience, value, and uncertainty of information, driving curiosity and exploration even in the absence of direct rewards (Kesner et al., 2022; Vellani et al., 2020; Wyart, 2020; Berke, 2018; Vellani et al., 2020; Shin & Kim, 2019; Gruber & Ranganath, 2019; Van Lieshout et al., 2020). Pharmacological studies show that boosting dopamine can reduce avoidance of negative information, making individuals more open to learning about potential losses as well as gains (Vellani et al., 2020; Wyart, 2020; Vellani et al., 2020). Dopamine also increases the willingness to exert effort for information and modulates the integration of new evidence into beliefs through prediction error signaling (Nour et al., 2018; Kutlu et al., 2022; Schultz, 2015; Wise & Jordan, 2021; Kobayashi & Hsu, 2018; Kahnt & Schoenbaum, 2025; Duszkiewicz et al., 2019; Yee & Braver, 2018; Lerner et al., 2020; Lee et al., 2021; Marshall et al., 2016; Bogacz, 2019; Gruber & Ranganath, 2019; Van Lieshout et al., 2020; Ripollés et al., 2018; Akiti et al., 2021; Chakroun et al., 2019). However, the influence of dopamine is context-dependent and shaped by individual differences, receptor subtypes, and circuit specificity (Berke, 2018; Mohebi et al., 2019; Kutlu et al., 2022; Schultz, 2015; Wise & Jordan, 2021; Kobayashi & Hsu, 2018; Westbrook & Braver, 2016; Kahnt & Schoenbaum, 2025; Duszkiewicz et al., 2019; Yee & Braver, 2018; Lerner et al., 2020; Lee et al., 2021; Marshall et al., 2016; Soares-Cunha et al., 2016; Salamone et al., 2016; Shin & Kim, 2019; Bogacz, 2019; Gruber & Ranganath, 2019; Van Lieshout et al., 2020; Shen et al., 2023; Ripollés et al., 2018; Akiti et al., 2021; Chakroun et al., 2019). Limitations include the complexity of dopamine's role, the involvement of other neuromodulators, and the need for more real-world, ecologically valid studies.

Claims and Evidence Table

Claim	Evidence Strength	Reasoning	Papers
Dopaminergic pathways drive motivation to seek or avoid new information	Strong	Strong convergent evidence from pharmacological, behavioral, and neuroimaging studies	(Kesner et al., 2022; Vellani et al., 2020; Wyart, 2020; Berke, 2018; Vellani et al., 2020; Nour et al., 2018; Kutlu et al., 2022; Schultz, 2015; Wise & Jordan, 2021; Kobayashi & Hsu, 2018; Westbrook & Braver, 2016; Kahnt & Schoenbaum, 2025; Duszkiewicz et al., 2019; Yee & Braver, 2018; Lerner et al., 2020; Lee et al., 2021; Marshall et al., 2016; Soares-Cunha et al., 2016; Salamone et al., 2016; Shin & Kim, 2019; Bogacz, 2019; Gruber & Ranganath, 2019; Van Lieshout et al., 2020; Shen et al., 2023; Ripollés et al., 2018; Akiti et al., 2021; Chakroun et al., 2019)
Dopamine reduces avoidance of negative information, increasing openness	Strong	L-DOPA studies show increased information-seeking about losses	(Vellani et al., 2020; Wyart, 2020; Vellani et al., 2020)
Dopamine signals salience and subjective value of information	Strong	Dopaminergic neurons encode salience, uncertainty, and value	(Kesner et al., 2022; Berke, 2018; Nour et al., 2018; Kutlu et al., 2022; Schultz, 2015; Wise & Jordan, 2021; Kobayashi & Hsu, 2018; Westbrook & Braver, 2016; Kahnt & Schoenbaum, 2025; Duszkiewicz et al., 2019; Yee & Braver, 2018; Lerner et al., 2020; Lee et al., 2021; Marshall et al., 2016; Soares-Cunha et al., 2016; Salamone et al., 2016; Shin & Kim, 2019; Bogacz, 2019; Gruber & Ranganath, 2019; Van Lieshout et al., 2020; Shen et al., 2023; Ripollés et al., 2018; Akiti et al., 2021; Chakroun et al., 2019)
Dopamine modulates cognitive effort and willingness to acquire information	Strong	Dopamine increases effort for information-seeking	(Westbrook & Braver, 2016; Salamone et al., 2016; Shin & Kim, 2019)

Claim	Evidence Strength	Reasoning	Papers
Circuit and receptor specificity shape dopaminergic influence	Moderate	Different circuits and receptors have distinct roles	(Berke, 2018; Mohebi et al., 2019; Kutlu et al., 2022; Schultz, 2015; Wise & Jordan, 2021; Kobayashi & Hsu, 2018; Westbrook & Braver, 2016; Kahnt & Schoenbaum, 2025; Duszkiewicz et al., 2019; Yee & Braver, 2018; Lerner et al., 2020; Lee et al., 2021; Marshall et al., 2016; Soares-Cunha et al., 2016; Salamone et al., 2016; Shin & Kim, 2019; Bogacz, 2019; Gruber & Ranganath, 2019; Van Lieshout et al., 2020; Shen et al., 2023; Ripollés et al., 2018; Akiti et al., 2021; Chakroun et al., 2019)
Other neuromodulators and contextual factors also play a role	Moderate	Noradrenaline, acetylcholine, and context modulate information-seeking	(Marshall et al., 2016; Van Lieshout et al., 2020; Shen et al., 2023; Chantranupong et al., 2023; Peters et al., 2021)

FIGURE Key claims and support evidence identified in these papers.

5. Conclusion

Dopaminergic pathways are fundamental to motivating the acceptance or rejection of new information by signaling salience, value, and uncertainty, and by modulating curiosity, effort, and belief updating. Their influence is robust but context-dependent, with important implications for learning, decision-making, and mental health.

5.1. Research Gaps

Despite strong evidence, gaps remain in understanding the real-world relevance, circuit specificity, and interaction with other neuromodulators in dopaminergic motivation for information acceptance.

Research Gaps Matrix

Dopamine Function	Salience/Curiosity	Valence Modulation	Effort/Cost	Belief Updating	Circuit Specificity
Human Studies	10	8	7	8	6
Animal Models	9	7	8	7	8
Pharmacological	8	9	7	6	7

FIGURE Matrix of research topics and study attributes highlighting gaps in dopaminergic motivation research.

5.2. Open Research Questions

Question	Why
How do dopaminergic pathways influence information acceptance in real-world, ecologically valid contexts?	Laboratory tasks may not capture the complexity of real-world information-seeking and avoidance.
What are the distinct roles of dopamine receptor subtypes and circuits in information-seeking motivation?	Understanding circuit and receptor specificity can clarify how dopamine shapes curiosity and avoidance.
How do dopamine and other neuromodulators interact to regulate information-seeking and belief updating?	Other neurotransmitters (e.g., noradrenaline, acetylcholine) may modulate or complement dopamine's effects.

FIGURE Open research questions for future studies on dopaminergic motivation and information acceptance.

In summary, dopaminergic pathways are essential for motivating the acceptance or rejection of new information, but further research is needed to clarify their circuit specificity, real-world relevance, and interactions with other neuromodulatory systems.

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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