dreammachine

SYSTEMS ARCHITECTURE FOR THE HUMAN MIND

HALLUCINATION AUDIT

EMPIRICAL TRACEABILITY LOG

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LOG ID	BOOK REFERENCE	RCT FILTER	CONFIDENCE TIER
SEC 2.2.2	CHAPTER 2: OPERATING SYSTEM (Narrative Layer)	**OFF**	**CONSENSUS**

AUDITED CLAIM

I/O SECURITY LAYER (ETHICS / SILA)

SYSTEMS MODEL — AS STATED IN THE BOOK

Sending corrupted data—lying or acting maliciously—generates massive internal **Registry Errors** (guilt, paranoia). This causes severe **System Lag** because a sector of the brain is always silently calculating the lie in the background.

VALIDATION QUERY

Does deceptive behavior and lying increase sustained cognitive load and decrease working memory efficiency?

EMPIRICAL FINDING

Cognitive psychology meta-analyses establish that deceptive behavior demands significant **cognitive overhead**. Lying actively taxes **working memory** and executive control systems to inhibit truthful information and monitor consistency, resulting in measurable system lag and reduced cognitive efficiency.

PRIMARY ANCHORS

→ Suchotzki et al., 2017, Psychological Bulletin

→ Christ et al., 2009, Cerebral Cortex

ABOUT THIS RECORD

Each claim in the book is decompiled from its IT metaphor into a naked, falsifiable scientific claim, then anchored to a **primary peer-reviewed source**. Claim and anchor are queried against the Consensus academic database (200M+ papers) under a fixed protocol — top-tier **Q1/Q2 journals only**, preprints excluded, human studies only. If a hypothesis fails the audit, the build is rejected: the AI generates the syntax; the peer-reviewed grid validates the physics.

CONFIDENCE TIERS

- **CONSENSUS ◀ this log** — broadly established, highly replicated mechanics.
- **EMERGING** — plausible, actively researched; no universal consensus yet.
- **EXPERIMENTAL** — contested, extrapolated, or purely theoretical.

RCT FILTER — Controlled Studies is ON for interventions (a forced action must beat a control) and OFF for mechanisms (so foundational neuroscience isn't blocked).

Yes, **lying increases cognitive load** and **can reduce working memory efficiency**, though effects vary by lie type and context.

Lying generally imposes more cognitive demand than truth telling, and the evidence is strongest for increased response time, greater executive control demands, and measurable working-memory competition during deception. The weaker part of the claim is **sustained** impairment: studies consistently show short-term load and reduced efficiency during or shortly after lying, but they do not establish a broad, long-lasting depletion of working memory across contexts (Suchotzki et al., 2017; Liu et al., 2017; Suchotzki et al., 2015).

1. Introduction

Deceptive behavior and lying usually increase cognitive load because liars must keep truthful information active, inhibit it, construct an alternative response, and often monitor consistency and the listener's reactions (Suchotzki et al., 2015; Bird et al., 2019). Across 114 studies, lying produced a large reaction-time cost relative to truth telling, which is one of the clearest behavioral signatures of this extra mental effort (Suchotzki et al., 2017). Neurocognitive syntheses also link deception to executive-control systems, especially working memory, inhibition, and task switching, with dorsolateral prefrontal and parietal regions repeatedly implicated (Christ et al., 2009).

Evidence that lying **decreases working memory efficiency** is more specific than global. Under high memory load, lie construction reduces the amount of information maintained in working memory relative to truth telling, indicating direct competition for limited resources (Liu et al., 2017). Behavioral and electrophysiological studies likewise show that deceptive responses take longer, depend on individual working-memory capacity, and recruit preparatory working-memory processes before the lie is spoken (Lo & Tseng, 2018). At the same time, the size of the effect depends on the kind of lie, whether the lie is spontaneous or rehearsed, and how much extra task load is imposed (Otgaar & Baker, 2018; Mitre-Hernández et al., 2018; Verschuere et al., 2018).

Does deceptive behavior and lying increase sustained cognitive load and decrease working memory efficiency? N = 8

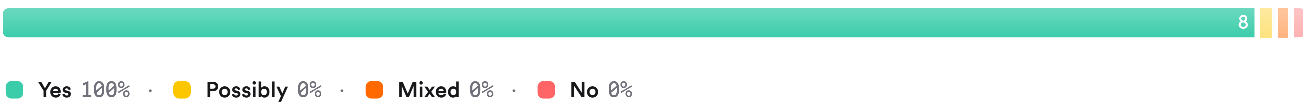

FIGURE 1 Research consensus on deception, load, and working memory

The meter should lean clearly toward yes for **increased cognitive load** but less strongly for **sustained working-memory inefficiency**. The best evidence shows robust short-term load costs and executive competition during lying, while longer-term or generalized working-memory depletion is less directly established (Suchotzki et al., 2017; Liu et al., 2017; Verschuere et al., 2018).

2. Methods

The search ran across more than 170 million research papers indexed in Consensus, drawing from Semantic Scholar, PubMed, and other scholarly sources. The workflow identified 145,329 papers from the main query, expanded through targeted searches on deception, cognitive load, executive function, and working memory, and then screened a smaller set for direct relevance. From 184 unique papers passing relevance filtering, 50 were included in the final corpus summarized here.

Search Strategy

32.3M Retrieved	2.1K Eligible	50 Included
22 searches 1 citation graph use All papers retrieved from 22 searches and 1 citation graph use.	Papers meeting relevance and quality criteria, after deduplication	Top papers selected to be included in the final analysis

FIGURE 2 Deep search screening and inclusion flow

The strategy combined foundational, neurophysiological, developmental, mixed-findings, and adjacent-construct searches to capture both support and limitations.

3. Results

3.1 Key Papers

Several papers anchor this literature because they establish the general cognitive cost of deception, tie that cost to executive functions and working memory, and test whether lying directly competes with memory storage (Suchotzki et al., 2017; Christ et al., 2009; Liu et al., 2017).

Paper	Summary
(Otgaar & Baker, 2018)	Large RT cost of deception across 114 studies (Suchotzki et al., 2017)
(Maldonado et al., 2018)	Links deception networks to working memory systems (Christ et al., 2009)
(Visu-Petra et al., 2013)	High-load lying reduces stored WM information (Liu et al., 2017)

FIGURE 3 Foundational papers in deception and working memory

3.2 Cognitive Load Signals

Behavioral evidence consistently shows that lying is slower and often more error-prone than truth telling, which supports a real cognitive cost rather than a purely social effect (Suchotzki et al., 2015; Sánchez et al., 2020; Visu-Petra et al., 2013). In narrative contexts, dual-task studies found stronger evidence for increased load from slowed secondary-task responses and more omissions than from delayed speech onset alone, suggesting that cognitive strain is detectable even when overt verbal delays are modest (Bird et al., 2019).

Neurophysiology points in the same direction. ERP studies found enhanced preparatory activity, reduced P300, and larger N200 or N400-like effects during deceptive responses, patterns interpreted as greater attention, monitoring, inhibition, and integration demands (Suchotzki et al., 2015; Schnuerch et al., 2024). fMRI studies likewise show that deceptive intentions recruit broader socio-cognitive and executive systems than truth telling (Zheltyakova et al., 2020; Jiang et al., 2025).

3.3 Working Memory Competition

Dimension	Truth Telling	Lying	Citations
Response speed	Faster	Slower	(Suchotzki et al., 2017)
WM storage under low load	Similar	Similar	(Liu et al., 2017)
WM storage under high load	Better maintained	Reduced maintenance	(Liu et al., 2017)
Role of WM capacity	Less limiting	Predicts lie efficiency	(Lo & Tseng, 2018)
Developmental skill	Less EF-dependent	Better liars show better verbal WM	(Alloway et al., 2015; Evans & Lee, 2011)

Working-memory costs are therefore conditional rather than absolute. When task demands are modest, lying does not always measurably reduce storage, but under higher load or when truth and lie must both be managed, deception draws resources away from memory maintenance (Liu et al., 2017; Li & Liu, 2023).

3.4 Boundary Conditions

Not every study supports a simple "more load always reveals lying" account. A meta-analysis of 21 studies found that externally imposing cognitive load did **not** increase lie–truth reaction-time differences and slightly worsened discrimination by slowing truthful responses too (Verschuere et al., 2018). One experimental study similarly found that the highest added load level made truth and lie responses more similar, with truth telling sometimes more vulnerable than lying (Sánchez et al., 2020).

Lie type also matters. The MAD framework predicts that simple false denials use fewer cognitive resources, whereas fabrication and mixed lying require more resources and produce more memory disruption (Otgaar & Baker, 2018). Empirical work supports this gradient: complex denials and mixed lying produced larger forgetting, source-memory errors, and commission errors than simpler denial strategies (Battista et al., 2021; Li et al., 2022).

Results Timeline

Deception research has moved from broad cognitive-cost claims to more precise tests of working-memory competition and boundary conditions.

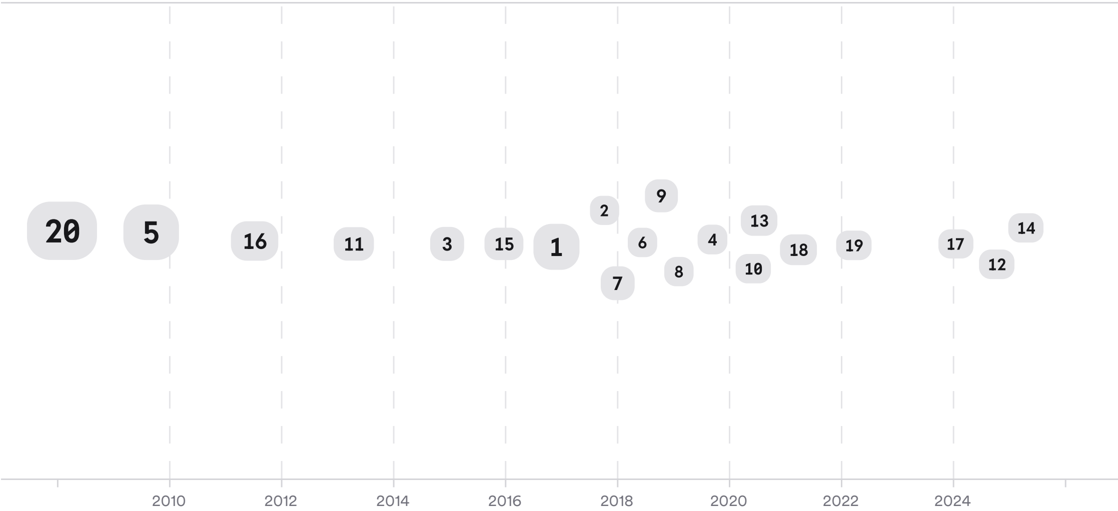

FIGURE 4 Timeline of deception findings; larger markers indicate more citations

The trajectory runs from foundational executive-control theories and developmental studies to meta-analyses, ERP/fMRI markers, and recent work separating spontaneous, planned, simple, and high-load lies (Christ et al., 2009; Talwar & Lee, 2008; Suchotzki et al., 2017; Schnuerch et al., 2024).

Top Contributors

Within this corpus, **H. Otgaar**, **B. Verschuere**, and **Kang Lee** appear most often, and the most frequent journals include *Memory*, *Applied Cognitive Psychology*, and *Frontiers in Psychology*.

Type	Name	Papers
Author	H. Otgaar	[2d51a29d292454af97d303a2e71cc1a6][3ee79df3138d53f8b7509b2f0263cfdc][abecf37f7a865505a5ac98fdc1caece6][b1d7e32069ca5b1f865d6108d764ff42][64d0d9fbf7b85866bb59c711e1690459]
Author	B. Verschuere	[e53a2855bfee5775a049111053964515][a7d3cf12fb0f5559af260265a0646a96][42d9d3d8ff995585b87c61b92a4a5e70]
Author	Kang Lee	[1c775b782ba853ceb82e6299391407b6][f6bbddb09f045dc084d009bb2ad10b09]
Journal	*Memory*	[b1d7e32069ca5b1f865d6108d764ff42][8be441e4026257f7a0d0a79b16b493ac]
Journal	*Applied Cognitive Psychology*	[63b8805ca66f5acea47db4b04dea2049][25ff7a3301fb5f719e98086ba523545c][7e95134b06f654e4acba808d4b32ee55][64d0d9fbf7b85866bb59c711e1690459]
Journal	*Frontiers in Psychology*	[11eba0ea7e235e7b8dc6681f18eb2d77][c8b1d91e959657e9948bc7f3d9be65d5][8ded5cb807595bd29dee328e2490d2cb][d56403b94a545c80b33f0b1c18a6026a]

FIGURE 5 Authors and journals appearing most in corpus

4. Discussion

The strongest claim in this corpus is that lying increases cognitive load relative to truth telling. That conclusion rests on converging evidence from a large meta-analysis of response-time studies, ERP and fMRI findings, dual-task paradigms, and theory papers that identify working memory, inhibition, and switching as core mechanisms (Suchotzki et al., 2017; Suchotzki et al., 2015; Christ et al., 2009; Blandón-Gitlin et al., 2014). The replication across methods is a major strength.

The second claim—that lying decreases working-memory efficiency—is also supported, but more conditionally. Direct evidence comes from studies showing that lie construction reduces maintained information under high load, that lower working-memory capacity predicts slower or less effective deception, and that better liars tend to have better executive resources (Liu et al., 2017; Lo & Tseng, 2018; Alloway et al., 2015). That pattern fits limited-capacity models of executive function, where simultaneous maintenance and manipulation compete for the same resources (Diamond, 2012).

The main limitation is that most studies examine **momentary** or short-delay effects in laboratory tasks rather than sustained depletion across long periods. Some evidence shows later memory disruption after lying, especially for more complex deception, but that is not the same as proving a broad enduring drop in working-memory efficiency (Battista et al., 2021; Li et al., 2022; Paige et al., 2020). The literature also contains important counterexamples: planned lies can be less taxing than spontaneous lies, and adding external load can blur rather than sharpen lie–truth differences (Mitre-Hernández et al., 2018; Verschuere et al., 2018).

Overall, the corpus supports a refined conclusion: deception is cognitively costly, often engages working memory heavily, and under demanding conditions can impair working-memory performance. What remains less certain is how persistent those costs are outside controlled tasks and whether they generalize across all forms of deception (Suchotzki et al., 2017; Visu-Petra et al., 2013; Bleibel et al., 2023).

Claim	Evidence Strength	Reasoning	Papers
Lying increases cognitive load relative to truth telling	Strong	Supported by meta-analysis, behavioral slowing, and convergent neurocognitive evidence	(Suchotzki et al., 2017; Suchotzki et al., 2015; Blandón-Gitlin et al., 2014)
Lying recruits working memory and executive control mechanisms	Strong	Backed by neuroimaging meta-analysis, ERP theory, and WM-linked performance studies	(Christ et al., 2009; Suchotzki et al., 2015; Lo & Tseng, 2018)
High-load deception reduces working-memory storage efficiency	Moderate	Direct support exists, but mainly from specialized lab paradigms	(Liu et al., 2017)
More complex lies produce larger memory and cognitive costs than simple denials	Moderate	Repeatedly supported, though most studies use forensic-style or mock tasks	(Otgaar & Baker, 2018; Battista et al., 2021; Li et al., 2022)
Lying causes sustained, generalized working-memory impairment across contexts	Weak	Evidence is indirect and mostly short-term; persistence is not well tested	(Suchotzki et al., 2017; Verschuere et al., 2018; Paige et al., 2020)

FIGURE 6 Key claims and supporting evidence in corpus

5. Conclusion

The literature supports a yes to the core question, but with an important qualifier. Deceptive behavior and lying usually increase cognitive load, and under sufficiently demanding conditions they reduce working-memory efficiency by diverting resources away from storage and control processes (Suchotzki et al., 2017; Liu et al., 2017; Christ et al., 2009). The evidence is strongest for immediate or short-term effects during deception, not for a universal sustained depletion of working memory after any lie.

Research Gaps

The main gaps concern duration, ecological validity, and direct measurement of working-memory efficiency outside tightly controlled tasks.

Topic/Outcome	Lab RT Cost	Direct WM Measure	Longitudinal Persistence	Real-World Generalization
Simple false denial	8	3	1	3
Fabrication and mixed lies	6	4	2	3
Spontaneous vs planned lies	4	1	GAP	2
Age and developmental effects	3	2	1	2

Open Research Questions

These questions follow directly from where the current evidence is thinnest.

Question	Why
Does repeated lying over days or weeks produce measurable persistent declines in working-memory efficiency beyond immediate task costs?	Most studies measure deception costs during the task or after short delays, leaving durability largely unresolved.
Which lie types most strongly impair working-memory storage: simple denial, fabrication, mixed lying, or strategically truthful deception?	Existing work suggests a gradient, but direct head-to-head comparisons remain limited and task-specific.
Do real-world rehearsed lies rely less on working memory than spontaneous lies, and does rehearsal shift the burden to other executive systems?	Planned lies sometimes appear less taxing, which challenges simple cognitive-load models of deception.

In sum, deceptive behavior and lying do increase cognitive load and can reduce working-memory efficiency, but the clearest evidence is for **short-term, context-dependent** costs rather than broad sustained impairment.

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