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Memory Distortions, Confabulation, and Their Impact on Polygraph Examinations

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Abstract

Memory distortions, particularly confabulation, present significant challenges to the accuracy and reliability of polygraph examinations in forensic and clinical settings. This paper investigates how confabulation—the unintentional production of false memories without deliberate intent to deceive—affects credibility assessments and polygraph outcomes. Unlike purposeful deception, confabulation involves individuals genuinely believing their false memories to be accurate, creating a complex interpretative challenge for traditional polygraph methodologies

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that rely primarily on physiological response patterns. Through a comprehensive review and analytical approach drawing on existing research in memory science, cognitive psychology, and polygraph examination practices, this study reveals that confabulated memories can trigger autonomic responses similar to those elicited by genuine memories, leading to false-positive results. The reconstructive nature of episodic memory processes means that confabulation can occur across all populations—not only in individuals with neurological conditions—and can be influenced by stress, anxiety, suggestive questioning, and cognitive load during examinations. Key findings demonstrate that confabulating individuals often present their false memories with rich sensory–perceptual detail and emotional coherence, making them appear authentic even to experienced professionals. Traditional polygraph methods struggle to distinguish confabulation from intentional deception because contemporary instrumentation and evaluation techniques have remained largely unchanged for decades, relying on approaches that fail to account for the complexity of memory distortions. To address these challenges, the paper proposes several critical improvements: enhanced training for polygraph examiners to recognise confabulation and understand neurological conditions affecting memory-monitoring systems; methodological refinements including pre-test thematic assessments, careful question construction to avoid leading language, and strategic question ordering to reduce associative interference; and the integration of objective multimodal physiological measurements with cognitive interviewing and reality-monitoring techniques. The study concludes that addressing the impact of confabulation on credibility assessment requires an interdisciplinary approach that combines psychophysiological measurement with insights from cognitive science and ethical considerations. Such integration is essential for improving the reliability and fairness of polygraph examinations while preventing wrongful accusations based on genuinely believed but false information, thereby maintaining public trust in the justice system.

Key words: confabulation, polygraph, deception detection

Introduction

Always present when two people exchange information are behaviours such as lack of clarity, ignoring cultural differences, and assuming we understand another person's thoughts, which often leads to misinterpretation of the intended message. Further, depending on the issue under discussion, there is also the possibility that the information provided may be incomplete, fictionalised, or result from distorted memory (Schacter, 2021). The fallibility of memory—especially within judicial contexts—has been debated for more than 100 years (Howe & Knott, 2015). Whether information is shared in conversation, a formal interview, an interrogation, or a polygraph examination, memory is continually operative, though not always perfect; without a knowledgeable and nuanced approach, one may find that a person's stated memory is fallible (Pezdek, 2012). This is especially true during polygraph examinations, where subjects are questioned about matters that, depend-

ing on whether they are truthful or deceptive, may or may not involve the recall of specific details relevant to the issue under examination.

The accuracy of credibility assessments using a polygraph instrument depends greatly on the accuracy of the information given by the subject. There is, however, a complicating factor identified as confabulation, which is sometimes present in various psychological and neurological conditions. Confabulation involves the presentation of false memories that an individual erroneously believes to be true. Such inaccuracies may arise from cognitive distortions rather than purposeful lying: a factor fundamentally distinguishing confabulation from deliberate deceit. These types of memory errors may occur in disorders such as traumatic brain injury, Wernicke–Korsakoff syndrome, and certain forms of amnesia (Francis et al., 2022).

Barba et al. (2019) note that the cause of confabulation can be linked to anomalies in reconstructive memory processes, which under normal conditions assemble past experiences accurately but, when impaired, may incorporate irrelevant, misleading, or erroneous sensory traces. Given the heightened stress or uncertainty often present during a polygraph examination, memory errors may be amplified because emotional arousal interacts with recall accuracy. This is particularly problematic in forensic contexts, where the stakes are high and avoiding classification errors (into truthful or deceptive) is critical (Geven et al., 2019). When an individual unintentionally provides inaccurate information due to confabulation, their statements may raise concerns—not because of deliberate dishonesty, but because their account contradicts documented evidence. Failure to recognise this possibility increases the risk that practitioners will mistakenly interpret memory distortion as intentional deception. This issue grows more complex when considering associated cognitive biases and phenomena examined extensively in the eyewitness memory literature. Memory distortion is not limited to individuals with neurological conditions; it occurs across all populations as a consequence of the reconstructive nature of episodic memory.

Errors in memory can emerge even in healthy individuals when subjected to particular experimental manipulations. Research shows that exposure to altered photographic material depicting fictitious events leads roughly 50% of participants to develop subsequently false memories of those events (Howe & Knott, 2015). These findings indicate that the combination of visual evidence and leading questions can significantly alter the nature of remembered experiences. The implications for polygraph assessment are clear: when prompts elicit narratives influenced by earlier misinformation rather than actual event memories, physiological responses may

suggest that a subject is withholding genuine information when, in reality, they are reporting what they genuinely believe to be true. Although detection-of-deception procedures typically emphasise identifying deliberate falsehoods through pre-test interviews and post-test interrogation, incorporating awareness of involuntary memory distortions such as confabulation may enhance assessment accuracy.

One approach employs reality monitoring to assess whether reported memories contain sensory-perceptual details, which distinguish genuine from imagined events (Dianiska et al., 2019). However, within polygraph settings there is little evidence that such methods are used. Failure to integrate diagnostic tools for identifying unintentional errors leaves open the possibility that confabulatory statements will be misinterpreted as calculated fabrications. Effective strategies also require assessment for co-occurring impairments, such as deficits in executive functioning or adaptive behaviour. Failure to do so may compromise attempts to determine whether memories are genuine during interviews (Francis et al., 2022). If standardised instruments such as the Confabulation Battery were incorporated into polygraph assessments concerning serious crimes, these tools could quantify both the frequency and domain specificity of suspected distortions, thereby allowing for better comparison across individuals (Barba et al., 2019). Incorporating such quantitative data into credibility assessments could provide a pathway towards more accurate distinction, during polygraph examinations, between false memories with neurological origins and deliberate deception.

The relationship between confabulation and polygraph accuracy should also prompt consideration from legal and ethical perspectives. Wrongfully accusing a person based on distorted yet genuinely believed information undermines trust in the criminal justice system just as seriously as failing to detect actual deception (Geven et al., 2019). The balance between identifying those who deliberately lie and excluding those whose false memories arise from impaired recall becomes a complex, multilayered challenge for polygraph practitioners tasked with interpreting physiological data intertwined with an individual's cognitive, emotional, and contextual functioning. This interplay between memory distortions such as confabulation and various polygraph methods suggests that comprehensive credibility assessments should extend beyond the binary categories of truth versus lie. This requires a process capable of distinguishing cases in which honest individuals provide faulty memories that contradict factual records, while concurrently enabling polygraph examiners to interpret physiological responses in light of memory-related mental processes (Ratzan et al., 2024).

Understanding Confabulation

Confabulation can be described as the production of false or erroneous memories that occur without conscious intent to deceive, often arising in conjunction with neurological conditions affecting the memory systems (Fotopoulou et al., 2008; Besharati et al., 2024). These memories may be entirely fabricated, while "some evidence suggests that spontaneous confabulations may be distinct phenomena from provoked memory errors" (Fotopoulou, 2010, p. 40). An important distinction between confabulation and deception is that a person will confidently and sincerely present an inaccurate story or memory without realising it is false, even when shown contradictory evidence. This differs from lying or deliberate fabrication, in which individuals knowingly provide false statements that they can later modify, deny, or explain away when confronted with contradictory information (Murphy-Hollies & Bortolotti, 2022).

Researchers have classified subtypes of confabulation. Karl Bonhoeffer (1868–1948), a German psychiatrist, was the first to identify two forms. The first (Bonhoeffer, 1901, as cited in Berlyne, 1972), termed confabulation of embarrassment, was described as "a direct result of the memory loss and depended for its presence on a certain attentiveness and activity. The patient tries to cover an exposed memory gap by an ad hoc confabulated excuse relating to his recent behaviour" (Berlyne, 1972, p. 31). Three years later, these confabulations were described as "momentary confabulations" (Bonhoeffer, 1904, as cited in Berlyne, 1972). The second type involved spontaneous stories containing "fantastic" elements. Kopelman (1987) revised these terms, referring to them as spontaneous and provoked confabulation.

In examining confabulation and delusion, Kopelman (2010) offered a more concise description: spontaneous (or fantastic) confabulations involve a continuous stream of invented memories that arise without external prompting. These may appear as exaggerated or unlikely stories, but can also manifest as seemingly genuine personal memories. Conversely, momentary (or provoked) confabulations are generally brief and emerge in response to specific memory challenges or questioning; such fleeting errors can appear even in individuals with normal cognitive function who are experiencing impaired memory access. Kopelman suggested that these temporary memory distortions are not necessarily indicative of underlying pathology but may surface when alternative memory-facilitating mechanisms are reduced. All of this raises the question: why is this relevant to the polygraph practitioner responsible for assessing credibility?

Modern research has expanded its focus beyond clinical pathology to examine how confabulation mechanisms affect healthy individuals exposed to suggestive influences (e.g., Zaragoza et al., 2013). When people encounter misinformation through conversations, manipulated images, or content from social media or the internet, the same mechanisms underlying pathological confabulation can operate subtly, leading individuals to believe inaccurate information (Liv & Greenbaum, 2020). The way how narratives are presented, and the interaction with an individual's receptive cognitive state, create conditions in which false information becomes integrated into personal memory despite lacking any grounds in experience. Findings suggest that law-enforcement officers conducting criminal investigations, and polygraph practitioners engaging in narrative-based questioning during assessments, may unintentionally elicit confabulation when subjects are asked questions to which they have no answer (Riesthuis et al., 2023).

Together, these features reveal confabulation as a complex phenomenon in which individuals genuinely believe their false memories to be accurate. Memory retrieval relies on accessing episodic memory, which contains mental representations of personally lived experiences (Robins, 2020). The fragmentary structure of episodic memory renders it particularly susceptible to distortions ranging from minor errors to elaborate fabrications. While confabulated memories may arise from neurological damage, they may also result from purely psychological or social influences, with outcomes ranging from spontaneous remission to chronic persistence. Recognising these features, and maintaining sensitivity to confabulatory behaviour, is essential for developing more advanced credibility evaluation techniques. Such instruments must distinguish not only intentional deception, but also sincere yet inaccurate testimony arising from this distinctive type of cognitive distortion.

Challenges for Examiners

Polygraph examiners responsible for assessing credibility when confabulation is present encounter a complex array of tasks that extend beyond the standard requirement of distinguishing truth from intentional deception. Similarities between confabulatory accounts and truthful memories may be particularly challenging. Confabulating individuals frequently infuse their statements with rich sensory-perceptual detail and emotionally consistent content (Barba et al., 2020); thus, polygraph examiners may discover that traditional indicators of deception—such as lack of detail or emotional inconsistency—are unreliable. The similarities between confabulated and genuine episodic memories can mislead even highly experienced

professionals, especially when an individual's account remains consistent across repetitions while still being factually untrue (Barba et al., 2019).

The interaction between examiner feedback and examinee cognition may create a feedback loop that intensifies intensifies distortions. Suggesting that a suspect may be deceptive on the basis of misinterpreted polygraph results can prompt subjects to confabulate further and offer additional false details drawn from inaccurate memories generated during the examination (Francis et al., 2022). These fabricated details risk becoming further consolidated before corrective measures can be taken. This may create increased confusion for both examinee and examiner, especially when consistency is later relied upon as evidence of accuracy during re-examination.

The ordering of interview questions can also introduce complications. When inadequate separation exists between related questions, cross-contamination effects may emerge, influencing responses to later probes, particularly in susceptible subjects (Ratzan et al., 2024). When an honest but inaccurate witness is wrongly labelled deceptive, the integrity of the evidence is compromised, and cognitively vulnerable individuals may experience psychological distress during police questioning (Liv & Greenbaum, 2020). Ultimately, skilled polygraph examiners must integrate three critical competencies: (1) interpretation of psychophysiological data, (2) detailed behavioural analysis, and (3) understanding of how neurological conditions may affect, and potentially compromise, testimonial accuracy. Many traditional polygraph methods, which assume that autonomic arousal linked to salient stimuli signals deception, fail—or at least become questionable—when confabulation is involved. Overcoming these limitations requires interdisciplinary collaboration and the use of enhanced interviewing approaches that are sensitive to spontaneous memory errors and to situational factors capable of provoking them during examination (Barba et al., 2019).

Training for Polygraph Examiners

To ensure future accuracy of results, polygraph educators should develop training for practitioners addressing how confabulation (i.e. the involuntary creation of false memories) influences both the psychophysiological measurements collected during polygraph examinations and the verbal accounts given by subjects. This necessitates expanding beyond conventional detection-of-deception methods to include knowledge of neurological and psychological conditions that may impair

memory monitoring systems, particularly in individuals who confidently provide factually incorrect statements (Barba et al., 2019). Such enhanced training would allow examiners to distinguish more effectively true deception from involuntary confabulated memories, reducing false-positive results arising from misinterpreted physiological reactions.

A critical component of this training involves developing comprehensive skills for recognising confabulation. Examiners must be able to distinguish between spontaneous confabulation and confabulation elicited by questioning, including the triggers, duration, and narrative features associated with each type (Kopelman, 2010). Spontaneous confabulation involves creating elaborate false stories without external prompting, whereas provoked confabulation emerges during direct questioning or interrogation. This knowledge would help professionals understand that strong recognition-based answers may reflect sincerely believed false memories rather than deliberate attempts to conceal culpable knowledge.

Improving Polygraph Methodology

Polygraph methods and instrumentation have remained relatively stagnant for more than a decade. If the polygraph is to be regarded seriously by the scientific community, with collaborative ventures undertaken, substantial standardisation is required in the recording of physiological parameters and the evaluation of data. The methods currently taught by polygraph educators and used by practitioners have changed little in the last 40–60 years. Physiological data continue to be evaluated using the visual inspection method "first proposed by Cleve Backster (1962)" (Krapohl & Shaw, 2015, p. 108) to evaluate data recorded using analog instruments. The need to refine polygraph methods cannot be overstated—especially in light of the challenges posed by confabulation, which demands a layered approach integrating objective, scientifically recognised measures with cognitively informed safeguards.

To reduce the impact of confabulation in polygraph testing, additional methodological improvements should be considered. First, conducting pre-test thematic assessments can help identify and exclude distorted autobiographical elements from the selection of probe questions. Second, questions should be carefully constructed to avoid leading language or assumptions that might bias responses. Third, the order of questions should be strategically arranged to minimise associative interfer-

ence between items. This approach allows examiners to distinguish more effectively between autonomic arousal caused by general stress and physiological changes specifically associated with deceptive behaviour.

We conclude by noting that improving the instrumental assessment of credibility requires an integrated, multidisciplinary approach combining psychophysiological measurement, insights from cognitive science, and ethical principles. By strengthening examiner training, increasing methodological precision, and incorporating additional verification procedures, it is possible to minimise the risk of errors stemming from confabulation. This comprehensive strategy preserves the reliability of evidence while acknowledging the complexities of human memory, ultimately leading to more accurate and equitable results in forensic and clinical contexts where memory distortions too often affect the determination of truth.

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