EUROPEAN POLYGRAPH

PUBLISHED SEMI-ANNUALLY

2025 VOLUME 19 NUMBER 2 (62)

ANDRZEJ FRYCZ MODRZEWSKI KRAKOW UNIVERSITY

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POLYGRAPH
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Journal of Andrzej Frycz Modrzewski Krakow University

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ICI Journals Master List – Index Copernicus:	100.00
Ministry of Education and Science (Poland):	100.00
ERIH PLUS	

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www.polygraph.pl

e-ISSN 2380-0550
ISSN 1898-5238

European Polygraph offers open access to all its issues:
http://www.polygraph.pl
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The original of *European Polygraph*
is its electronic version.

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POLYGRAPH
PUBLISHED SEMI-ANNUALLY
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DOI: 10.2478/EP-2025-0007

Investigative Interviewing
Priming the Interview Context

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Abstract

This article provides a critical review of existing research on the use of priming in investigative interviewing, including its influence on secure attachment, openness, and helpfulness motivations. The potential benefits of priming are discussed as well as the methodological challenges and ethical considerations associated with its use. This technique has intuitive appeal, yet empirical evidence supporting its effectiveness is, at present, limited. The implications of these findings are discussed, as well as possible future directions for research in this field.

Key words: Priming, Investigative Interviewing, social psychology, information disclosure, secure attachment, openness, helpful motivations

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Introduction

In the aftermath of the 11 September 2001 attacks, a specialised counterterrorism team (CT) was tasked with the formidable challenge of dismantling the intricate networks that sustained domestic and international terrorism (Davis et al., 2010).

Their investigation revealed a network of illicit activities in the United States (US) ranging from weapons acquisition to financial fraud, all intended to support terrorist operations, for example the plot to plant explosive devices in the New York City subway (2009) (McNeill et al., 2010). A critical factor in the success of this operation was the ability to gather intelligence from witnesses and informants, who were often reluctant to cooperate for fear of retaliation. This reticence is analogous to the challenges found in high-crime neighbourhoods, where residents often prioritise self-preservation over engagement with law enforcement.

In light of this challenge, the CT adopted a sophisticated approach to interviewing, with a focus on establishing rapport and trust. Additionally, the CT acknowledged the importance of priming, recognising the subtle but pervasive influence of environmental and psychological cues on behaviour and memory. With this understanding, the CT meticulously considered the selection of interview locations that offer privacy and comfort to reduce anxiety and foster a sense of security. The arrangement of physical space was influenced by considerations from environmental psychology (Moser & Uzzell, 2003; Nasar, 2011), specifically leveraging the concept of contextual priming (Dawson et al., 2017; Dianiska et al., 2019; Okken et al., 2013). For example, "ten-to-two" seating arrangements were employed to promote a more relaxed and conversational atmosphere (Schollum, 2005).

Researchers have repeatedly emphasised the significance of establishing environments that are conducive to attaining desired outcomes in human interaction. For instance, Batson et al. (1997) demonstrated that fostering empathy can lead to an increased propensity for cooperation and mutually beneficial solutions. Accamma et al. (2024) underscore the significance of establishing an optimal interpersonal context, asserting that fostering a secure and non-confrontational atmosphere, akin to enhancing empathy, promotes open communication and the dissemination of truthful information. These findings underscore the pivotal role of understanding and trust in achieving goals. The significance of these findings lies in their ability to facilitate more productive and beneficial interactions, whether in the personal realm of interpersonal interactions where empathy is crucial to finding common

ground, or in professional contexts where a secure environment is pivotal to obtaining accurate information.

The CT also acknowledged the significance of affective priming, recognising that a genuine connection and demonstration of empathy could foster cooperative behaviour. For instance, positive emotions can be primed (Carlson et al., 1988; Ye et al., 2020). Barraza & Zak. (2009) found that positive emotions increased oxytocin levels, which is linked to trust and cooperation. Similarly, the induction of feelings of gratitude has been demonstrated to engender cooperation by cultivating a sense of obligation to reciprocate benevolence and generosity (Bartlett & DeSteno, 2006). The aforementioned study demonstrated that priming feelings of gratitude increased helping behaviour and cooperation.

The notion of priming, or setting up an environment conducive to interaction, has been demonstrated to play a crucial role in facilitating cooperation in a variety of contexts. Smith et al. (2014) demonstrated that priming empathy and perspective-taking encourages cooperation by increasing understanding of others' needs and motivations. In a similar vein, this article emphasises the pivotal function of priming in investigative interviewing, a field in which establishing trust and rapport is essential, particularly in high-stakes situations where fear and mistrust can impede cooperation. These findings underscore the importance of meticulously designing environments to achieve specific goals, whether to promote collaboration in a social context or elicit information in a professional setting. By acknowledging the impact of priming on human interaction we can enhance communication and promote more productive outcomes in a variety of fields.

Exploring the Meaning and Roots of Priming

In the preceding section, the utilisation of priming techniques in the context of counterterrorism investigations was examined, wherein the establishment of trust and rapport is paramount for the elicitation of information from witnesses and informants. In order to comprehend the full scope of priming's potential in investigative interviewing, it is imperative to undertake a comprehensive examination of its historical origins and theoretical underpinnings. This section provides an overview of the origins of priming research, encompassing its early conceptualisations and the subsequent evolution of its applications in the domain of social psychology and related fields.

The origins of research on this topic can be traced back to Donald Hebb's (1949) seminal work on internal mental representations, also known as "cell assemblies". Subsequent to this, Karl Lashley (1951) introduced the term "priming" in his research on language production.

Early studies in this field investigated carryover effects between tasks and priming effects within a single task (Bargh, 2014). For instance, exposure to vocabulary related to "elderly people" has been demonstrated to unconsciously influence participants' walking pace (Leys, 2024). These studies initiated the framework for comprehending the priming's impact on social psychology and related domains. Despite these early findings, the power of priming extends beyond simple word associations, raising ethical concerns about its potential for manipulation. Understanding priming reveals a potential for manipulation, particularly in the context of post-hypnotic suggestion.

Post-hypnotic suggestion is a powerful tool for manipulating behaviour. The film "The Manchurian Candidate" provides a compelling illustration of this, as Raymond Shaw transforms into an assassin when triggered by the Queen of Diamonds card (Carruthers, 1998). This form of (supraliminal) priming is not confined to direct commands but also encompasses the manipulation of an individual's environment and experiences to influence their behaviour and beliefs. Although fictional, "The Manchurian Candidate" reflects real-world concerns about mind control as evidenced by the CIA's MKUltra programme.

This clandestine project involved experiments with hypnosis, drugs, and torture to explore the potential for subtle manipulation of human behaviour. The ethical implications of these techniques are significant and raise concerns about autonomy, free will, and privacy. The moral of "The Manchurian Candidate" and the MKUltra project highlight the dangers associated with unchecked power and the potential for psychological manipulation. These examples underscore the necessity for ethical boundaries on priming practices, as well as safeguards to prevent abuse.

In the domain of psychology, the term "priming" signifies the pre-activation of a cognitive process. It refers to the notion that exposure to a specific stimulus exerts an influence on one's subsequent response to a different stimulus. To illustrate this concept, Anderson (2001, p. 471) offers a definition that stipulates priming as "the improvement in the processing of a stimulus as a function of a previous presentation". A similar definition is proposed by Stroebe et al. (2013, p. 138), who focus on the increased likelihood of activating a pattern that was recently presented or used.

This concept is further elaborated by Major (2008, p. ii), who characterises priming as "the benefit an event receives when its processing has been preceded by the processing of a related or identical event".

While the preceding definitions underscore the beneficial impacts of priming, it is imperative to acknowledge that priming can concomitantly engender adverse or inverse consequences. This phenomenon has been termed "negative priming", "contrast effect", "anti-priming", or "reverse priming" (Fiedler, 2003; Glaser, 2003). It occurs when the presentation of a stimulus results in diminished performance or even contrary effects (Krüger et al., 2013).

The term "priming" was first introduced to the field of psychology during the 1950s and emerged as a concept in the discourse surrounding fluent language and reading (Bermeitinger, 2016). In 1951, Karl Lashley proposed that "expressive word units" require partial pre-activation before internal or overt utterance. He contended that in the absence of this pre-activation, humans would be capable of producing words only in isolation, one after the other. This concept dates back to James (1890), who proposed two "awakening" processes for spoken words. Lashley referred to this pre-activation as the "priming of expressive units" (Bermeitinger, 2016), thus introducing the concept of priming for the pre-activation of mental concepts. Initially, only internal stimuli or thoughts were considered to trigger pre-activation (Lashley, 1951). However, the term "priming" soon evolved to include pre-activation by external stimuli or events, and this remains its predominant use today. This understanding of priming is closely related to the concept of implicit cognition, which can be defined as the set of cognitive processes that occur below the threshold of conscious awareness (Toth & Reingold, 1996).

Implicit cognition

This phenomenon, often referred to as an "autopilot" of the mind (Ayan, 2019), exerts a subtle influence on our actions and decisions, often operating beyond our immediate awareness. It encompasses a range of implicit attitudes, beliefs, and biases that shape our behaviours and responses to external stimuli.

As demonstrated in the relevant literature, cooperation and goal pursuit can be influenced non-consciously through priming (Bargh, et al., 2001; Fitzsimons & Bargh, 2003). An excellent example of implicit cognition is the phenomenon of priming, which occurs when exposure to one stimulus unconsciously influences responses to subsequent stimuli.

The phenomenon of unconscious automatic processing has its origins in the repeated association of concepts. To illustrate, consider the association between "fidgeting" and "lying" in the context of deception detection. This perceived link, though often inaccurate, can become ingrained due to its recurrent depiction in media and popular culture. Consequently, observing a person fidgeting during an interview may unconsciously activate the concept of "deception" in the observer's mind, potentially biasing their judgment, even though fidgeting is not a reliable indicator of dishonesty. This unconscious activation and its influence on judgment is an example of automaticity in action. More broadly, automaticity operates according to the perception-behaviour link (Berkowitz, 1997; Chartrand & Bargh, 1999). This model posits that perception can directly influence behaviour without conscious intervention, underscoring how ingrained associations can lead to biased judgments in deception detection, despite the best of intentions.

Beyond Awareness: How "Focus" Illustrates the Priming Effect

In the film "Focus" (Ficarra & Requa, 2015), the protagonist, Nicky, employs a sophisticated scam involving priming to manipulate a high-stakes gambler. This technique, which has been extensively researched in the domain of cognitive psychology, entails the subtle exposure of an individual to a stimulus to influence their subsequent responses. The protagonist orchestrates a series of seemingly innocuous encounters for his target, embedding the number 55 in various visual and auditory cues throughout the day, such as a bellhop's uniform, a strategically placed tattoo, and even background music. This repeated exposure, which occurs subconsciously, effectively primes the gambler to favour 55 when he is later forced to select a seemingly random number, enabling Nicky to win an improbable wager. This cinematic illustration offers a compelling exposition of how priming can subtly influence decision-making processes, underscoring its potential impact even in contexts ostensibly characterised by high stakes and rational decision-making. Furthermore, this example is consistent with the tenets of embodied cognition, as the gambler's physical experiences with the number 55 throughout the day shape their understanding and preference for it in the abstract decision-making moment. This underscores the profound influence that physical experiences exert on mental activity, and by extension, the potential of these experiences to shape abstract decision-making processes. This phenomenon exemplifies the intricate interconnection between perception, action, and cognition, thereby highlighting the significance of a holistic approach to understanding human behaviour.

Embodied cognition

As the example from "Focus" illustrates, the gambler's physical experiences with the number 55 throughout the day ultimately shaped their seemingly abstract preference for that number. This underscores a pivotal facet of embodied cognition, underscoring the notion that our physical experiences profoundly influence our cognitive processes and comprehension, even in abstract domains. This concept merits further exploration. In essence, embodied cognition challenges the traditional Cartesian view of the mind and body as separate entities, proposing instead that our physical experiences fundamentally shape our mental activity and understanding of abstract concepts (Shapiro, 2014; Barsalou, 2008; Niedenthal et al., 2005). For instance, the initial association of warmth with caregiver proximity may result in the conceptualisation of psychological intimacy through the metaphor of warmth (Williams et al., 2009). This demonstrates how abstract concepts are "embodied" or grounded in sensorimotor experience.

Metaphors are central to the theoretical framework of embodied cognition (Lakoff & Johnson, 1980), as they serve as instruments for comprehending the world and are reflected in common parlance. Metaphors of sight are employed to express comprehension, "I see what you mean", verticality to describe power dynamics, "they are at the bottom of the hierarchy", and containers to represent our inner self, "I feel empty inside". This underscores the profound influence of bodily experiences on our understanding of even the most abstract concepts.

Implicit–Embodied Interactions: A Priming Approach

The concept of embodied cognition emphasises the interconnectedness of mind and body, demonstrating how physical experiences shape our understanding of abstract concepts. Utilising this theoretical framework, the subsequent examination explores the manner in which these embodied experiences interact with implicit cognition, thereby influencing priming effects. This section explores the interplay between implicit and embodied cognition, demonstrating how these two concepts work together to shape priming at both conscious and unconscious levels.

It is vital to understand this interplay if we are to better appreciate how the present study builds on the concept of embodied cognition, which highlights the influence of physical experiences on cognitive processes. The subsequent examination will focus on the manner in which implicit and embodied cognition interact and contribute to priming effects.

The concepts of implicit and embodied cognition, along with priming, are interconnected and elucidate the workings of the unconscious mind. Implicit cognition encompasses the automatic mental processes that shape thoughts and behaviours outside of conscious awareness (Bargh, 1997). Embodied cognition posits that these processes are grounded in sensorimotor experiences, with mind and body inextricably linked (Barsalou, 2008). Priming, a key mechanism within implicit cognition, demonstrates how exposure to one stimulus can unconsciously influence responses to subsequent stimuli by revealing automatic associations and activations of related concepts (Greenwald & Banaji, 1995). This interplay is evident in how physical experiences such as early childhood warmth associated with caregivers, can shape implicit understanding of abstract concepts like affection (Williams et al., 2009). Therefore, implicit cognition, informed by embodied experiences and revealed through priming, provides a comprehensive framework for understanding the pervasive influence of unconscious processes on human thought and behaviour.

In order to further explore the nuances of how implicit and embodied cognition contribute to priming, it is essential to establish a clear classification of priming phenomena. The subsequent section proffers a comprehensive classification of priming phenomena, accentuating the multifarious ways in which priming can influence our thoughts and actions.

Classification of Priming

Christina Bermeitinger, a Professor at the University of Hildesheim, has made a significant contribution to the field of priming research. Her research has focused on response priming and the influence of motion stimuli on action control and decision-making (Bermeitinger, 2016). Her research has explored the impact of ageing on response priming, revealing distinct activation and inhibition patterns in older adults compared to younger adults (Bermeitinger et al., 2011; Bermeitinger & Kappes, 2018). Furthermore, her research on semantic priming has demonstrated how momentary mindsets modulate priming effects for different classifications (Bermeitinger, 2016).

Priming phenomena are diverse, leading to various classifications based on stimuli type, prime-target relationship, and observed effects. Common classifications include:

- **Affective Priming:** Investigates how emotions influence perception and attention (Klauer, 1997; Klauer & Musch, 2003).

- **Associative Priming:** Employs two commonly associated stimuli (Wentura, 2000).
- **Contextual Priming:** The specific process where environmental cues activate related concepts in the mind, influencing subsequent thoughts and actions. A mechanism by which environmental psychology effects occur (Bargh, 2014; Dawson & Hartwig, 2017; Neequaye et al., 2018; Notaro et al., 2024).
- **Cultural Priming:** Examines the impact of cultural factors on cognitive processes (Aydinli & Bender, 2015; Oyserman & Sorensen, 2013).
- **Kindness Priming:** Exposure to acts of kindness influences subsequent behaviour and perception of others (Fryburg, 2022).
- **Masked Priming:** Uses a very briefly presented priming, often below conscious awareness (Eimer & Schlaghecken, 2002; Van den Bussche et al., 2009).
- **Perceptual and Conceptual Priming:** Relies on the form and meaning of the stimulus, respectively (Schreuder, 1984).
- **Positive and Negative Priming:** Accelerates or slows down processing and memory retrieval (Allport & Wylie, 1999).
- **Repetition Priming:** Enhances processing through repeated exposure (Forster & Davis, 1984; Stark & McClelland, 2000).
- **Response Priming:** Investigates how priming influences responses to a target (Chiarello et al., 1990; Ferrand & New, 2003; Xavier Alario et al., 2000).
- **Semantic Priming:** Involves logically or linguistically associated words (Bermeitinger et al., 2008, 2011).
- **Social Priming:** Explores how social cues and information influence behaviour and decision-making (Molden, 2014).
- **Subliminal Priming:** Studies effects of stimuli presented below conscious awareness, notably in advertising (Elgendi et al., 2018; Warren, 2009).
- **Supraliminal Priming:** Involves the deliberate consideration of priming stimuli such as envisioning a supportive figure or reflecting on past experiences of security and comfort (Jones et al., 2022).

It is important to note that priming effects are not always instantaneous and can

vary in duration depending on the type of priming and the stimuli involved (Maxfield, 1997; Ostergaard, 1998; Xavier Alario et al., 2000). Priming is a complex phenomenon with various classifications and subclassifications, and research continues to explore its nuances and applications in different fields.

Priming in Investigative Interviewing

As Bermeitinger (2016) posits, priming is a subtle yet potent psychological phenomenon that shapes our responses to stimuli based on prior exposure. Dawson et al. (2015) state that priming is a psychological technique that is effective in introducing specific ideas and concepts into an individual's awareness (often without their awareness), and can influence thought processes, emotional responses, and behavioural tendencies, leading individuals to align their actions with the concepts presented. Building on this understanding of the potential influence of priming, Neequaye's (2022) critical review of the literature focuses on its application in investigative interviewing, examining three main areas in particular.

Priming a secure attachment

Secure attachment, characterised by feelings of trust, safety, and comfort in relationships as well as a willingness to rely on others, and a belief that one is loved and valued (Terzi, 2013), may play a crucial role in the disclosure of sensitive information. This relationship is explored in research examining the impact of self-esteem and feelings of safety on disclosure. For example, empirical studies have shown that individuals who are reminded of their positive qualities and experiences (self-affirmation) are more likely to disclose embarrassing information (McQueen & Klein, 2006; Sherman & Cohen, 2006). Conversely, focusing on past failures and negative experiences has been shown to inhibit disclosure (Davis et al., 2016). Similarly, the recollection of a close and trusted relationship has been shown to increase individuals' willingness to share personal information, leading to more honest self-reports and detailed disclosures (Mikulincer & Shaver, 2007; Davis et al., 2016; Dawson et al., 2015).

Findings suggest that disclosing sensitive information can be facilitated by creating a safe and supportive environment, either by bolstering self-worth or activating feelings of attachment security.

Secure attachment and disclosure

Mounting evidence suggests that secure attachment plays a significant role in influencing information disclosure (Ellington, 2024). This is likely because individuals who feel secure and confident in their relationships are more comfortable opening up and sharing sensitive details. This assertion is further substantiated by the prevailing consensus that secure attachment, widely regarded as the cornerstone of trust and support in interpersonal relationships, exerts a profound influence on subsequent interactions and fosters prosocial behaviours such as disclosure (Collins & Read, 1990). Specifically, securely attached adults have been shown to readily develop intimacy and closeness with others and to be comfortable both depending on and being dependent on others (Feeney et al., 1994). This secure base facilitates the open expression of distress and the easy reception of comfort and support, leading to greater relationship satisfaction and higher levels of psychological well-being (Fuller & Fincham, 1995; Simpson, 1990).

The notion of secure attachment, with its emphasis on psychological well-being, finds resonance in clinical definitions. In clinical contexts, a secure attachment is delineated as a relationship between a child and their caregiver that provides pleasure, security, and safety, ultimately fostering psychological well-being (Dunham & Woolley, 2012; Sullivan, 2003). Building on this understanding of secure attachment, Johnson (2004, 2007) emphasises key takeaways from attachment theory relevant to couple therapy. He highlights the innate human need for emotional connection and the crucial role that those powerful emotions play in regulating these connections. Furthermore, the concept of secure attachment is presented as a haven, buffering against anxiety and vulnerability in relationships. Building on the understanding of secure attachment and its importance in adult relationships, therapeutic techniques have been developed to foster these feelings of security.

Priming techniques for secure attachment

One such approach is known as "priming a secure attachment", which refers to techniques employed to temporarily activate mental representations of security and safety. By temporarily activating these feelings of security, couples therapy can help individuals access more adaptive ways of interacting and communicating, particularly during times of conflict or stress. These techniques typically involve evoking thoughts and feelings that are associated with supportive attachment figures. This

process can be facilitated through various methods, including supraliminal and subliminal priming.

Existing research suggests that priming for secure attachment can lead to several beneficial outcomes, including:

- Reduced defensiveness. This has been demonstrated to result in a lowering of defences in individuals with anxious or avoidant attachment styles, thereby promoting more open and adaptive responses to emotional challenges (Gillath et al., 2008; Mikulincer et al., 2001).
- Enhanced emotion regulation: It can enhance the ability to cope with stress and regulate emotions, leading to greater emotional stability and well-being (Gillath et al., 2022).
- Increased prosocial behaviour: It can promote empathy, compassion, and willingness to help others (Mikulincer & Shaver, 2005; Mikulincer et al., 2005).
- Enhanced attention to social cues: It can improve attention to social cues, particularly those related to caregiving and attachment (Norman et al., 2015).
- More positive attitudes towards children: In mothers, it has been observed to foster more positive implicit and explicit attitudes towards their children (De Carli et al., 2016).

Furthermore, neuroimaging studies have demonstrated that secure attachment priming can influence specific brain structures associated with social cognition and emotional regulation, suggesting a neurological basis for these effects (Canterberry & Gillath, 2013; Gillath et al., 2012; Tang et al., 2017). This neurological connection is consistent with research indicating that inducing specific psychological states, such as a sense of secure attachment, can influence an individual's willingness to disclose information. For instance, Dawson et al. (2015) found that activating a sense of secure attachment, characterised by a favourable self-perception and positive regard for others, can motivate individuals to divulge more information in an interview setting. Similarly, Davis et al. (2016) demonstrated that cultivating attachment security and self-affirmation can also promote the disclosure of sensitive information. Dawson et al. (2017) found that environmental cues, such as conducting interviews in spacious rooms, can prime a feeling of openness and lead to increased information sharing. This finding underscores the pervasive influence of attachment on information disclosure, a phenomenon

that carries profound ramifications for diverse domains, including personal relationships and national security.

In the context of national security, for instance, fostering secure attachment could be a means of encouraging citizen cooperation in preventing terrorist attacks.

Priming interviewees to be open to information

The notion of "openness" is frequently employed to describe the act of communication, with individuals using the terms "open" or "closed" to characterise others when discussing specific subjects. This comparison suggests that information is contained within individuals, similar to objects within a container. This notion is substantiated by two strands of research.

The Concept of Openness

Firstly, the human body is often perceived as a container (Lakoff & Johnson, 1980) leading to the understanding that information is "held" inside, and disclosure involves "releasing" it. This is exemplified by idioms such as "keeping" or "holding" information, implying that significant information possesses a certain "weight" (Jostmann et al., 2009). Indeed, studies have demonstrated that the act of concealing secrets can be physically burdensome (Slepian et al., 2012), while the disclosure of secrets can be perceived as a form of liberation (Slepian et al., 2014).

Second, recent research has explored the spatial aspect of this representation. Since our comprehension of representations is anchored in physical experience, the "openness" of our surroundings may influence our propensity to be open and disclose information. Studies have demonstrated that individuals in more expansive and accessible environments tend to divulge more personal information about sensitive subjects (Okken et al., 2012, 2013). While a significant proportion of this research focuses on commercial and organisational settings, analogous effects have been observed in therapeutic contexts (Miwa & Hanyu, 2006).

This underscores the significance of taking environmental factors into account when endeavouring to promote communication and facilitate information exchange in any given setting.

Environmental Cues and Openness

The influence of environmental cues on information disclosure has become a topic of increasing interest in recent years. For example, Dawson et al. (2017) investigated the impact of "openness priming" on individuals' willingness to share information, drawing on the conceptual representation that equates physical openness with communicative openness. Study participants, interviewed in a spacious room, disclosed more information about a mock terror threat than those interviewed in a smaller room. This suggests that room size may prime feelings of openness and consequently increase information sharing. However, it should be noted that this phenomenon, termed "openness priming", has been met with a degree of scepticism. Subsequent studies attempting to replicate these findings produced inconsistent results, raising questions about the reliability and generalisability of the initial claims.

Conceptual replications seeking to test the same hypothesis using different methods (Nosek & Errington, 2017), yielded equivocal results. For instance, Dianiska et al. (2019) found that priming openness through objects, as opposed to room size, did not significantly increase disclosure compared to neutral priming or to priming designed to evoke a sense of closedness. Moreover, Hoogesteyn et al. (2019) observed that manipulating room size and interpersonal sitting distance had minimal impact on the amount of information disclosed. These inconsistencies underscore the need for further research to elucidate the relationship between environmental cues and information disclosure, and to ascertain the specific conditions under which such priming effects might occur.

This work highlights the complex nature of priming effects and calls into question the generalisability of the original findings by Dawson et al. (2017). While environmental spaciousness may subtly influence disclosure in certain contexts, evidence suggests that it is not a consistently reliable method of eliciting increased information sharing. Consequently, further research is warranted to examine the interplay of variables that may enhance the efficacy of this technique in investigative interviews and other applied contexts.

Priming helpfulness motivation

The potential for priming techniques to enhance information disclosure in investigative interviews has garnered significant attention from the academic community. Neequaye (2018) proposed that activating individuals' motivation to be helpful

could increase their willingness to share information, based on the premise that helpfulness promotes cooperation (Van Lange, 1999). The rationale underpinning the utilisation of helpfulness priming in investigative interviews is predicated on the understanding that helpfulness is frequently associated with increased cooperation and a willingness to assist others. The objective of this priming is to enhance individuals' propensity to share information with the interviewer. This assertion is further substantiated by extant research in the domain of social psychology, which has demonstrated that helpfulness can foster prosocial behaviours, such as cooperation and the dissemination of information. Consequently, the purpose of priming in investigative interviews is to foster a more collaborative environment by enhancing interviewees' willingness to cooperate and disclose information. This is based on the premise that helpfulness promotes cooperation. (Arieli et al., 2014; Capraro et al., 2014).

To test this hypothesis, Neequaye et al. (2018, 2019) conducted two experiments with similar methodologies. In these, participants took on the role of informants with knowledge of a mock terror plot. They were either primed to help or exposed to a neutral prime. Specifically, the helping priming involved reflecting and writing about engaging in helpful behaviours, whereas neutral priming focused on participants' morning routines. Following the priming exercise, participants were interviewed about the terror plot, with an interview style that consisted of either explicitly requesting help or simply posing direct questions. Findings from these experiments demonstrated no significant disparities in information disclosure between the helping priming and neutral priming conditions, implying that helpfulness priming may not be a reliable method for increasing information disclosure in this context. Consequently, while certain priming techniques demonstrate the potential to enhance information disclosure in investigative interviewing settings, others require further investigation and refinement to optimise their efficacy.

Several factors may be responsible for these inconsistencies. The effectiveness of helping priming might depend on individual differences such as the interviewees' pre-existing levels of helpfulness or their motivation to cooperate with the interviewer. The context of the interview, including perceived stakes or the relationship between the interviewer and the interviewee, might also play a role. Furthermore, the specific method employed in the priming process may also influence its effectiveness.

These inconsistencies underscore the need for further research to elucidate the conditions under which helping priming is most effective. Future studies could investi-

gate the moderating role of individual differences and contextual factors. Exploring diverse priming methodologies, such as using subtle environmental cues or incorporating visual stimuli, could offer significant insights. A comprehensive understanding of these nuances will help to determine the potential of helping priming as a reliable technique for enhancing information disclosure in investigative interviews.

Identifying the factors that influence its effectiveness could result in helping priming become a valuable tool for interviewers seeking to promote cooperation and elicit crucial information. Therefore, it is essential to understand the specific effects of different priming techniques on information disclosure.

The Effects of Priming on Information Disclosure in Investigative Interviews

When employing the concept of priming, the interviewer must approach the task with a thoughtful and deliberate mindset, paying close attention to the particular concept they aim to activate. This is of particular importance given that different types of priming can exert varying influences on specific aspects of cognitive functioning and social interaction.

Research findings indicate that individuals who have been primed with the concept of openness tend to report a heightened sense of ease when it comes to disclosing personal information and experiences, thereby facilitating enhanced disclosure during the interview process (Dawson et al., 2017). This heightened propensity to divulge personal information is of paramount importance in obtaining comprehensive insights from interviewees.

Conversely, when the concept of warmth is primed, perhaps through the use of friendly gestures, empathetic listening, or personable communication styles, the result is often a noticeable enhancement in rapport (Kraft-Todd et al., 2017).

Priming Methods Used in Investigative Interviews

This study proposes a holistic framework for optimising the interviewing environment, drawing upon the research of Dawson et al. (2017). The proposed framework integrates principles of environmental psychology to create an atmosphere conducive to the well-being of both interviewer and interviewee and therefore, to the elicitation of authentic responses. The proposed approach encompasses the following key elements:

- Visual Cues: A calming colour palette (e.g. light blue or beige) is suggested for wall hues to instil tranquillity. Additionally, the integration of transparent furniture elements (e.g. glass-topped tables) is proposed as a means of conveying a sense of openness and modernity, with the hypothesis that this will influence perceptions of transparency and spaciousness. Similarly, the introduction of seascape paintings is suggested as a method of evoking feelings of openness and expansiveness.

- Priming interviewees through verbal and visual stimuli, which involves strategically placing keywords such as "openness", "honesty", "truthfulness", and "cooperation" in the hallway leading to the interview rooms to subtly influence interviewees to give desired responses. Using magazines with targeted cover words in the lobby waiting area serves to further influence the interviewees' mindsets. This approach aligns with research on priming, which suggests that exposure to certain stimuli can influence subsequent behaviour and cognition (Bargh & Chartrand, 1999).

- Biophilic Design: Incorporating potted plants to introduce greenery can foster a sense of calm and relaxation. This is in line with research on the restorative effects of nature (Ulrich, 1999).

- Interpersonal Interactions: It is emphasised that interviewees should be greeted in a friendly manner and listened to attentively. This initial interaction can foster rapport and contribute to a positive interview experience, which may have a significant impact on the level of information disclosed (e.g. rapport-building techniques have been shown to increase cooperation) (Tickle-Degnen & Rosenthal, 1990). Using priming statements such as "Thank you for your cooperation" during these interactions may further encourage cooperative behaviour.

- It is widely acknowledged that initial impressions have a significant impact on subsequent interactions (Holmes, 2016; Swider et al., 2022). Therefore, cultivating a friendly and welcoming atmosphere from the outset should be prioritised. This approach should be adopted to facilitate constructive interviews by establishing a positive initial rapport.

- Broken windows theory (Wilson & Kelling, 1982) posits that the presence of visible signs of crime and disorder can contribute to an increase in criminal activity. Conversely, to mitigate the possibility of priming effects associated with law enforcement, all related signage and materials must be substituted with neutral images and a calming colour palette. This environmental manipulation,

in conjunction with the incorporation of motivational phrases within the setting, serves to promote a sense of psychological safety and encourages candid responses from interviewees.

- Strategic placement of role players in various locations throughout the premises, including parking lots, walkways, lobbies, and corridors, is instrumental in facilitating naturalistic observation of participant behaviour and incidental exposure to pre-interview conversations. These dialogues should be informed by priming theory (Bargh & Chartrand, 1999) and incorporate carefully selected keywords to subtly influence participant perceptions before formal interviews.

- It is imperative that all personnel involved in any operation or investigation, including role players and staff members, receive comprehensive training in evidence-based interviewing techniques. These techniques have been shown to foster rapport and elicit information (e.g. cognitive interview) (Fisher & Geiselman, 1992). To further enhance the non-threatening environment, the attire of the role players should be deliberately chosen to avoid any resemblance to law enforcement uniforms. Before the interview, role players should meticulously rehearse their approach, utilising props and a flexible script to facilitate natural interactions characterised by warmth and approachability. This "working the room" strategy should subsequently be adopted as a standard operational procedure.

Examples of words priming disclosure are "reveal", "trust", "cooperation", "clarity", "openness", "collaboration", "air out", "forthcoming", and "disclosure".

It is imperative to employ a comprehensive, multi-stage approach to achieving the desired results. The subject must interact with the priming stimuli through multiple senses: sight, hearing, touch, smell, and even taste. These stimuli should be subtle and unobtrusive, incorporating a single carefully chosen word or phrase as well as thoughtfully used colour schemes, props, images, and role players that blend seamlessly into their surroundings. The overall objective is to cultivate a sense of cooperation and collaboration by fostering rapport through the utilisation of priming techniques (Dawson & Hartwig, 2017).

Although these recommendations drew upon established research on investigative interviewing and marketing concepts, it is important to note that empirical research was not conducted to measure the effectiveness of the proposed environmental changes. Nevertheless, if these adjustments can even marginally alleviate anxiety, mitigate resistance, or promote cooperation, they warrant serious consideration for implementation.

Challenges and Future Directions

The field of priming research currently faces a series of challenges, most notably regarding the replicability of certain findings (Neequaye, 2022). This "replication crisis" underscores the need for rigorous experimental methodologies, including larger sample sizes, precise operational definitions of priming, and robust statistical analyses. Furthermore, the adoption of open science practices, such as pre-registration of studies and the sharing of data and materials, is imperative to enhance transparency and facilitate independent verification of results.

Future research should go beyond merely demonstrating the existence of priming effects and delve deeper into the underlying mechanisms and boundary conditions. The exploration of the interplay between priming and other cognitive processes should be pursued. For example, by investigating how priming interacts with attention, memory, motivation, and emotion, researchers can gain a more comprehensive understanding of its influence on behaviour. For instance, how does the effectiveness of priming vary depending on an individual's current emotional state or motivational goals?

It is also imperative to investigate the neural mechanisms underlying priming effects. The use of neuroimaging techniques, such as functional Magnetic Resonance Imaging (fMRI), can facilitate the identification of the specific brain regions and networks implicated in priming. This, in turn, can shed light on how different types of priming (e.g. semantic, affective) are processed and how they influence cognitive and behavioural responses.

These potential applications highlight the need for further research into the neural mechanisms of priming. For instance, the field of priming research holds considerable promise for diverse areas such as:

Education: This exploration encompasses the potential of priming to enhance learning and memory, foster creativity, and promote positive social behaviours in educational settings.

Marketing: Examining how subtle cues can influence consumer preferences and purchasing decisions, leading to more effective advertising and product design.

Clinical psychology: The investigation of the potential of priming to modify maladaptive thoughts and behaviours, and to contribute to the development of novel therapeutic interventions for conditions such as anxiety and depression.

By addressing these challenges and pursuing these future directions, priming research can continue to provide valuable insights into the complexities of human cognition and behaviour, and has the potential to make significant contributions to a wide range of fields, including investigative interviewing.

Conclusion

This review has explored the potential of priming techniques to enhance investigative interviewing by subtly influencing the interviewee's cognitive and emotional state to foster an environment more conducive to information disclosure. The investigation has examined how priming can influence secure attachment, openness, and helpfulness, while acknowledging the methodological challenges and ethical concerns that warrant careful consideration. Despite the encouraging potential of priming, issues of replicability underscore the need for rigorous research and cautious interpretation of findings. Future investigations should delve deeper into the underlying mechanisms of priming, explore its interplay with other cognitive processes, and address the complex ethical dimensions. This includes the examination of the effectiveness of different priming techniques across diverse individuals and contexts, and the acknowledgement of the limitations of a "one-size-fits-all" approach.

It is imperative to underscore that priming techniques should not be regarded as a substitute for other evidence-based interviewing practices, such as the Cognitive Interview. Instead, priming should be regarded as a complementary tool that can be used in conjunction with other established practices to enhance their effectiveness. For instance, priming techniques could be employed to cultivate a more conducive and collaborative interview environment, thereby facilitating the implementation of memory-enhancing techniques akin to those employed in the Cognitive Interview.

By integrating the insights gained in this review, fostering interdisciplinary collaboration, and continuing to explore the complexities of priming, we can refine investigative interviewing practices, enhance information gathering, and ultimately ensure ethical conduct in the pursuit of justice.

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EUROPEAN
POLYGRAPH
PUBLISHED SEMI-ANNUALLY
2025 VOLUME 19 NUMBER 2 (62)

DOI: 10.2478/EP-2025-0008

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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EUROPEAN
POLYGRAPH
PUBLISHED SEMI-ANNUALLY
2025 VOLUME 19 NUMBER 2 (62)

DOI: 10.2478/EP-2025-0009

Law on Using Polygraph in Lithuania – Latest Developments and its Impact

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Abstract

Lithuania is one of the very few countries where the use of the polygraph is regulated by a dedicated law adopted by the highest legislative authority: the Lithuanian Parliament. This year marks the 25th anniversary of the adoption of the Law on Using Polygraph.

This article provides a brief overview of the latest developments concerning the Law on Using Polygraph and the newest draft, as well as its potential impact on the use of the polygraph in Lithuania.

Key words: lie detector, polygraph, polygraph examination, lie detection, polygraph law, polygraph sub-law, polygraph legislation in Lithuania

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The Law on Using Polygraph of the Republic of Lithuania (hereinafter – Polygraph Law) has now been in force for a quarter of a century.

Development of the polygraph legislation began around 1999, when the first drafts were prepared. The Polygraph Law was adopted on 29 August 2000, but came into full force almost two years later, when on 12 July 2002 the Rules of Polygraph Examinations were adopted by the Government of the Republic of Lithuania.

It must be noted that the Polygraph Law alone did not constitute a sufficient basis for commencing polygraph examinations – adoption of the Rules of Polygraph Examinations was necessary.

The Polygraph Law has undergone several revisions in 2012, 2015, 2016, 2019 and 2020. One of the most substantial revisions – introduced in 2015 – involved amendments to the definitions of "polygraph" and "polygraph examiner", as well as updates to the list of institutions authorised to conduct polygraph examinations and to the cases in which the polygraph may be used (Article 4 of the Polygraph Law). Article 5 (Purpose and cases of polygraph examinations) was also enacted in a new version. Furthermore, a new version of the Rules of Polygraph Examinations was adopted by the Government of the Republic of Lithuania was also adopted in 2015.

Before 2015, the examinations were applied to civil servants, sworn officers, servicemen, and candidates for the above positions. Following the 2015 amendments, the category of examinees was expanded to include contracted personnel, as well as human sources of intelligence and criminal intelligence.

Prior to the changes enacted in 2015, Article 4 contained paragraph 3, which provided that designated institutions were required to establish special polygraph units, whose chain of command was directly subordinated to the heads of those institutions. After 2015, this regulation was repealed.

In addition, Article 5 ("Purpose and cases of polygraph examinations") was adopted in a new version. In the revised version of Article 5, paragraph 2 concerning the object of the examination was deleted, and the former paragraph 3, regulating the cases of polygraph examinations, became paragraph 2. Its content was also amended; in particular subsection 2 stating that polygraph examinations could be conducted during disciplinary checks, and internal or criminal intelligence investigations was replaced with three new subsections. Under the amended provisions, polygraph examinations may be conducted during counterintelligence activities; in

the course of checking criminal intelligence sources and of information provided by such sources; and in relation to officers involved in the protection of dignitaries.

In addition to the above amendments, the Government of the Republic of Lithuania adopted a new version of the Rules of Polygraph Examinations in 2015.

Though the detailed amendments to the Polygraph Law and Rules could serve as a topic for a separate discussion, this article focuses on the most recent revisions of the Polygraph Law.

In reviewing the latest developments of the Polygraph Law, the author does not necessarily share the same views and vision as the legislator regarding the future direction of the Polygraph Law. Nonetheless, the author will explore the implications of the forthcoming amendments for the scope of polygraph use and consider their potential impact on national security, the workload of polygraph examiners, and other related matters.

In this article, the author seeks to provide an overview of the substantial upcoming amendments to the Polygraph Law.

Speaking broadly, the proposed changes will dramatically expand the use of the polygraph in Lithuania and may result in a considerable increase in the number of examinations conducted. Such an expansion is likely to contribute to the strengthening of the national security regime in Lithuania.

The Article 4(2) in the draft of the Polygraph Law [Lietuvos Respublikos. Poligrafo naudojimo įstatymo], extends the existing categories of examinees (civil servants or employees, officers and military personnel, or candidates for these positions, as well as clandestine participants in criminal intelligence and intelligence cooperators) also to employees of suppliers, suppliers being natural persons, and candidates for cooperation with intelligence services.

This amendment substantially strengthens the ability of Lithuanian intelligence services to test their human intelligence sources and even candidates for such roles, thereby increasing operational effectiveness and serving as an important safeguard against penetration and infiltration by foreign agents.

The next substantial and entirely new amendment (proposed Article 4(3) of the Polygraph Law) authorises the State Security Department of the Republic of Lithuania to conduct polygraph examinations on foreigners for the purpose of controlling their residence in Lithuania and during transit. This effectively allows the

use of the polygraph in relation to nearly 50,000 individuals annually (according to statistics, more than 49,000 immigrants from non-EU countries arrived in 2023) [Migration in numbers].

The proposed amendment to the new Article 4(3) is closely linked to the new Section 1(3) of Article 5 of the draft Polygraph Law, which provides an additional case in which the polygraph may be used: *foreigners may be examined in order to assess whether they pose a threat to national security*. Assuming conservatively that only 1% of such immigrants would be tested, this would amount to more than 400 polygraph examinations per year.

Another significant amendment concerns Article 5(2)(1). Its current version states that testing may be enforced in cases where a security clearance procedure is ongoing and there are grounds to believe that the person has concealed information or provided misleading biographical data about themselves or their environment.

The draft version states that testing may be enforced *in order to examine whether a person has concealed or provided misleading data concerning areas due to which they may be deemed untrustworthy or disloyal to the Lithuanian State*.

This amendment is new in essence and broadens the applicability of the polygraph. It removes the previous requirement of a mandatory ground (stipulating the need for reasons to believe that a person concealed or misrepresented biographical information). Under the proposed amendment, the authorities responsible for vetting will no longer need "grounds to believe" and will be allowed to use the polygraph simply "in order to examine whether...".

Here we observe the application of *the presumption of guilt* – a legal principle that contrasts with the fundamental principle of criminal justice, namely, *the presumption of innocence*, set out in Article 31(1) of the Constitution of the Republic of Lithuania, adopted by the citizens of the Republic of Lithuania in the referendum on 25 October 1992 [Lietuvos Respublikos Konstitucija].

Presumption of guilt is, however, widely practised in certain legal fields (such as administrative offences). For instance, no one today questions the rule that refusal by a driver to undergo alcohol testing is treated as grounds for sanction, in order to prevent road accidents caused by intoxicated drivers.

In the author's view, this amendment will increase the numbers of cases in which the polygraph may be applied and will thus contribute to enhancing national security.

The final substantial amendment appears in the new version of Article 10, which provides that refusal to undergo polygraph examination will automatically result in failure to obtain a security clearance or in its termination. In the case of foreigners, refusal to be examined will result in the automatic presumption that such a person poses a threat to national security.

Current legislation does not impose such strict consequences for refusal to be tested.

Here again we observe the application of the presumption of guilt principle. Given the current geopolitical situation and the serious threat of invasion, all the proposed amendments to the Polygraph Law may certainly be regarded as adequate measures which maintain a reasonable balance between the supervision of human rights and national security interests.

As the amendments remain in the adoption phase, it is difficult to predict which of the proposed regulations will ultimately enter into force.

Conclusions

The proposed amendments to the Polygraph Law introduce substantial changes to the use of the polygraph in the national security sector and are expected to strengthen it.

Some of the amendments rely on the presumption of guilt, which, in the current geopolitical context, constitutes a proportionate measure.

Use of the polygraph in the vetting process is becoming increasingly common and, in light of growing threats to the independence and freedom of Lithuania, constitutes an adequate administrative action that cannot be considered a violation of personal privacy.

The author is confident that non-cooperation with state agencies (e.g. refusal to undergo polygraph examination) and the consequent non-issuance or revocation of security clearance, or treating a foreigner as posing a threat to national security, represents a well-balanced measure in the present geopolitical circumstances.

The amendments will provide Lithuanian intelligence agencies with stronger powers and robust tools to counter rising national security threats.

As regards the number of polygraph examinations and the workload of examiners, a dramatic increase is expected.

Finally, the proposed amendments remain a draft and must be finalised, adopted, and promulgated before they can be assessed in real-world application.

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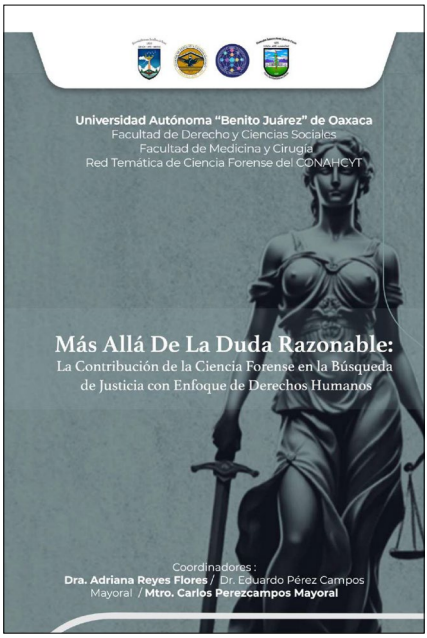
EUROPEAN
POLYGRAPH
PUBLISHED SEMI-ANNUALLY
2025 VOLUME 19 NUMBER 2 (62)

DOI: 10.2478/EP-2025-0010



Scientific Interrogation: The Strategic Use of Evidence (SUE) Technique*

* The article was already published in Spanish version as a chapter book with the following details: Pérez-Campos Mayoral, E., Severino, M., Deeb, H., Granhag, P. A., Pérez-Campos, E. L., Hartwig, M., & Fallon, M. (2024). Scientific Interrogation: Strategic Use of Evidence (SUE) technique. In Reyes Flores, A., Pérez Campos Mayoral, E. & Perez Camposmayoral, C. (Eds.), *Beyond a reasonable doubt: The contribution of forensic science in the search for justice with a human rights approach* (pp. 117–160). Autonomous University "Benito Juárez" of Oaxaca. Faculty of Law and Social Sciences & Faculty of Medicine and Surgery of the Autonomous University "Benito Juárez" of Oaxaca; Thematic Network of Forensic Sciences of the National Council for the Humanities, Sciences and Technologies (CONAHCYT) of Mexico. ISBN: 978-607-8815-34-0.

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Abstract

The Strategic Use of Evidence (SUE) technique represents a method of scientific interrogation[**] that entails the strategic management of case information and evidence. The technique offers guidance to interrogators on the utilization of available information, encompassing pre-interrogation planning, the formulation of strategic questions based on the evidence and the strategic disclosure of evidence[***].

The primary objective of this technique is to enhance the likelihood of discerning deceit by detecting inconsistencies in the statements or comments made by suspects[****].

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** The term "interrogation" is defined as the act of questioning a suspect, who may or may not provide information, including indications of guilt or knowledge of criminal activity. In this context, the term "interrogation" is understood to encompass the broader concept of investigative interviewing. This can be defined as a non-coercive method for questioning individuals involved in an investigation, such as victims, witnesses, and suspects, with the aim of gathering complete, accurate, and reliable information about an event or situation. The principal objective is to ascertain the truth and facilitate decision-making throughout the investigative process. For these reasons, in this work, the term "investigative interviewing" will be used with the greatest frequency.

*** Although the terms "evidence" and "proof" are often used interchangeably, there are subtle differences in their meaning, especially in the legal context. These differences can vary between Mexico and the United States due to their different legal systems. In this paper, the concept of evidence will be used to refer to any object, substance, mark, document or information that can serve to establish the existence of a crime, identify those responsible or reconstruct the events that occurred.

**** The terms " suspect," " victim," and "witness" possess fluid roles within an incident. A suspect or victim may also be a primary witness, while the term "witness" can encompass third-party

Numerous studies have shown that the SUE technique enhances the precision of deception detection in various contexts, such as police investigations, employment interviews, and security screening. Police trainees who received SUE training were able to detect deception with an accuracy rate of 85.4%, compared to 56.1% for untrained trainees.

The Strategic Use of Evidence technique is designed to highlight discrepancies between a suspect's statement and the available evidence, exploiting the differing cognitive processes of truth-tellers and liars. This technique is predicated on the assumption that individuals who engage in deception are prone to offering contradictory statements when confronted with evidence that challenges their narrative. This phenomenon occurs when suspects who are deemed to be guilty are compelled to modify their narrative, which often results in discrepancies. Conversely, suspects who are innocent and truthful maintain consistency in their explanations, which align with both the evidence and their original account.

The SUE technique has the potential to detect deceit and has been widely employed by law enforcement agencies and other organizations worldwide.

Some of the essential advantages that SUE offers are:

– Surpasses conventional deception detection methods, such as relying on body language cues, in terms of effectiveness.

– With appropriate training, this technique is user-friendly and straightforward to learn and implement.

– Has versatile applications, suitable for a wide range of settings.

Key words: interrogation, confession, criminal interrogation, statement–evidence inconsistencies, Strategic Use of Evidence (SUE)

Highlights

- Evidence should not be presented at the beginning of the interview.
- SUE draws on the suspects' perceptions of the evidence and their counter-interrogation strategies.
- The Strategic Use of Evidence (SUE) Technique is effective in detecting lies and eliciting information.
- SUE facilitates inconsistencies between the evidence and the lie teller account.

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observers. It's crucial to remember that individuals in any of these positions may vary in cooperativeness (cooperative/uncooperative) and honesty (lie tellers/truth tellers). Similarly, a suspect's designation implies probable involvement based on evidence, but not definite guilt. Consequently, there are guilty suspects and innocent suspects.

Background information

The strength of evidence is crucial to the legal system (Canter, & Alison, 1999) and to the interviewing of suspects (Cassel, & Hayman, 1996). An important phase in an investigative interview is the disclosure of evidence and the assessment of the information reported. Researchers at the University of Gothenburg developed the Strategic Use of Evidence (SUE) (Hartwig, 2005). This technique is defined as an information-gathering framework that provides an evidence disclosure protocol and questioning strategy to elicit verbal cues to assess veracity in adults and/or children (Clemens et al., 2010; Hartwig et al., 2011; Hartwig et al., 2014; Tekin et al., 2016). Research has revealed that the SUE technique is one of the most effective lie detection techniques (Hartwig et al., 2006; Vrij et al., 2023), as well as being one of the few techniques that has been recommended to be used in the criminal justice systems (Vrij, & Fisher, 2016). However, the SUE is an evidence-based interview protocol, so interviewers need to possess independent evidence to use it (Vrij et al., 2022).

Swedish researchers revealed that interviewers trained in the SUE technique were more accurate at detecting deception (85.4%) than those not trained, who were instructed to interview the suspects in a manner of their choosing (56.1%) (Hartwig et al., 2006; Vrij, 2000; Vrij, & Granhag, 2006; Vrij et al., 2011). For their part, Luke et al. (2016) found that SUE-trained American interviewers achieved a 65% accuracy rate in lie detection compared to 43% precision with untrained interviewers. According to Luke and his colleagues, the difference in accuracy rates between the studies may be because many of the participants in their study were experienced professionals in the United States (US), who may already have developed their approach to interviewing. In other words, novice interviewers may be easier to teach than experienced ones.

The SUE technique is an active interview technique (Masip, & Herrero, 2015) that uses an active lie detection approach (Hartwig, & Granhag, 2014) by generating different behaviors between truth-tellers and lie-tellers (Vrij, & Granhag, 2012). According to Granhag (2010), SUE comprises a strategic and a tactical level. The strategic level consists of principles that underlie the technique. Three of these principles are related to the suspect (A) perception of evidence; (B) counter-interrogation strategies; and (C) verbal behavior; one principle is related to the interviewer: (D) the interviewer takes the perspective of the suspect (Granhag, & Hartwig, 2015). The tactical level can be divided into three categories:

1) pre-interview assessment of background information (evidence), 2) strategic questions, and 3) strategic disclosure of evidence (Granhag, & Hartwig, 2015).

Strategic level

Principles related to the suspect

The suspect's perception of the evidence

This principle refers to the evidence that the suspect believes the interviewer has (estimated knowledge). Evidence perception is a determining factor for a suspect's verbal behavior, i.e., the suspect's statements in response to the interviewer's questions (May et al., 2017). If the suspect believes that the interviewer has strong evidence, they tend to be forthcoming and reveal more information. On the contrary, if the suspect believes that the interviewer does not have strong evidence, they tend to withhold and disclose less information (Tekin, 2016). The estimated knowledge about the crime allows the suspect to manage their statement content (counter-interrogation strategies of the suspect). "When the suspect is unaware of the interviewer's knowledge, their perception of the evidence will be derived from an underestimation (thinking the interviewer has less evidence than they actually have), or an overestimation (thinking the interviewer has more evidence than they actually have)" (Tekin, 2022, 108).

The suspect's counter-interrogation strategies

The term "counter-interrogation strategies" is used to describe the suspect's efforts to portray themselves in a credible manner and persuade the interviewer of their innocence (Clemens et al., 2013; Granhag & Hartwig, 2008; Granhag et al., 2009; Luke et al., 2014). In other words, the objective is to create the impression of honesty. Guilty suspects believe that disclosing many details will damage their credibility, while innocent suspects consider that giving too much information will show their truthfulness (*Impression management*) (Colwell et al., 2006). Impression management is not a factor that is taken into consideration when the SUE is applied. On the contrary, the act of lying during interrogation can be conceptualized as an information strategic game, necessitating the individual to make calculated decisions in order to achieve the desired outcome. The research conducted by Hilgendorf and Irving (1981) demonstrates the considerable number of strategic decision-making processes involved in this process. In this regard, suspects who are deemed to be

guilty tend to decide on a response strategy before the interview commences. This may entail a desire to be forthcoming, to avoid providing responses, or to wholly deny their role. This is known as the Information Management Strategy (Hartwig et al., 2010). The basic strategies (responses) that guilty suspects tend to employ to convince the interviewer of their innocence are to *avoid* revealing critical information or to *escape* or *deny* any involvement in the crime (Hartwig, & Granhag, 2023). The counter-interrogation strategy that the suspects employ during the interview will determine their verbal behavior, i.e., how much information they will reveal (Granhag, & Hartwig, 2015; Tekin et al., 2015). The counter-interrogation strategy is also related to the type of question posed by the interviewer, which has a direct impact on the suspect's response and the potential cues to deception that may emerge. It has been observed that open-ended questions tend to elicit avoidance strategies from suspects, whereas specific, funnel-line questioning has been shown to result in inconsistencies between the suspect's statements and the available evidence (Hartwig & Granhag, 2023).

The suspect's verbal behavior (verbal responses)

Verbal behavior refers to the suspects' statements made during the interview. The suspects' statements are a result of their perception of the evidence, their counter-interrogation strategies, and the nature of the questioning (Clemens, 2013; Hartwig & Granhag, 2023). Based on the amount of information the suspects believe the interviewer has, the suspects may employ a *forthcoming* or *withholding strategy* and provide their statements accordingly.

During the interview process, the suspect's statement is compared to the evidence the interviewer possesses. When the statement contradicts evidence known before the interview, the suspect is said to provide *statement-evidence inconsistencies* (Hartwig et al., 2006; Vredeveldt et al., 2014; Clemens, & Grolig, 2019). For example, a witness reports seeing the defendant arguing with the victim at the liquor store on Friday, January 3 at 9:00 p.m., but the interviewer has two closed-circuit television (CCTV) records that show inconsistencies with the testimony. One record shows the witness at the local airport at the time of the event, the second shows the interior of the liquor store, where only the cashier, the victim, and the offender were present at the time of the event.

If the suspect changes their story as a result of the disclosure of evidence so that their statement fits the evidence (Granhag et al., 2013), this is known as *within-statement inconsistencies*. These two possible interview outcomes (*statement-evidence inconsistencies and within-statement inconsistencies*) are cues to deception (Granhag et al., 2013; Vredeveldt et al., 2014). Statements of guilty suspects are more likely to include statement-evidence inconsistencies and within-statement inconsistencies than those of innocent suspects (Granhag & Hartwig, 2015; Hartwig et al., 2014; Luke et al., 2017).

Principles related to the interviewer

The interviewer takes the perspective of the suspect

Perspective-taking is the ability to consider the world from another person's point of view, allowing one person to anticipate the other´s behavior and reactions (Galinsky et al., 2008). An interviewer who understands the perspective of a suspect is more likely to be successful in the interview. Three aspects of perspective-taking that are important for interviewers are: 1) reading the suspect's perception of the evidence, 2) predicting the suspect's counter-interrogation strategy, and 3) predicting the verbal response that will follow (Granhag, & Hartwig, 2008; Justice et al., 2010; Soufan, 2011).

By understanding how the suspect might view the evidence, interviewers can better simulate alternative explanations the suspect might offer (*suspect's information management*). The field of suspect information management examines how a suspect might perceive and manage information related to an investigation. This encompasses their interpretation of the evidence, which may include attempts to downplay its significance or to provide an alternative explanation. By grasping this perspective, investigators can foretell potential justifications or explanations that the suspect might proffer. This anticipation allows for the implementation of more effective questioning strategies, such as the funnel-line of questioning, which includes increasingly specific questions that relate to the evidence without directly revealing it (Hartwig & Granhag, 2023), allowing for the identification of inconsistencies in the suspect's response and the potential uncovering of inconsistencies that provide leads. Ultimately, suspect information management facilitates a more profound comprehension of the suspect's motives and thought processes.

It is important to note that suspects may also engage in perspective-taking, trying to predict what tactics the interviewer will use. In summary, perspective-taking is

a valuable skill because, by taking the perspective of the suspect, interviewers can better understand the suspect´s likely reaction and response to questions. This can help interviewers to be more successful in their interviews (Granhag, & Hartwig, 2015).

Suspects' management of incriminating information

The goal of a guilty suspect is to convince the interviewer that he is innocent (Strömwall et al., 2006). The suspect may conceal critical information for fear of the consequences of revealing incriminating information (Neequaye, & Luke, 2018; Srivatsav, 2019). To maintain credibility, a suspect may selectively disclose certain information while concealing incriminating details. (Granhag, & Hartwig, 2015). A suspect will have to decide whether to talk or remain silent, what information to reveal or conceal (Srivatsav et al., 2019), whether to tell the truth or lie (Suchotzki, 2018), and how to answer the interviewer´s questions. Suspects will also have to consider how to weave truthful and deceptive information together to appear credible (Verigin et al., 2020). In other words, a suspect's perception of the evidence can influence their choice of counter-interrogation strategy, which in turn affects their verbal response.

Suspects who lie engage in strategic information management, meaning they can choose between an avoidance strategy or an escape/denial strategy (Hartwig & Granhag, 2023). An avoidance strategy is typified by evasive tactics, such as being intentionally vague or avoiding mentioning certain details (Verigin et al., 2019). For example, a suspect may avoid mentioning that he visited a certain place at a certain time when asked to freely provide a narrative in response to an open-ended question. In contrast, an escape strategy involves the denial of a direct question, for example, a suspect could deny that he was at a certain place at a certain time (Hartwig, 2014).

In contrast, truthful suspects have no critical information to conceal, hence they employ a forthcoming strategy by providing a full and truthful account. Truth-tellers are motivated by the belief in a just world (Lerner, 1980). They trust that the world is a fair place and that individuals receive the outcomes they deserve (Hafer & Begue, 2005). Thus truth-tellers tend to believe that if they are forthcoming, they will be believed simply because they deserve it (Feather, 1999). Truth-tellers' forthcomingness may be based on an illusion of transparency (Gilovich, et al., 1998; Savitsky & Gilovich, 2003). This tendency to over-

estimate the extent to which internal processes are evident in behavior occurs in several contexts (Vorauer & Claude, 1998). Research suggests that innocent people generally hold this illusion of transparency. Kassin and Norwick (2004) found that innocent suspects were more likely to waive their Miranda rights than guilty suspects. Innocent suspects often justified this behavior by arguing that they had nothing to hide and that if they could simply provide their story to the interviewer, he would 'see' that they were innocent.

Tactical level

Pre-interview assessment of background information (evidence)

A pre-interview assessment of evidence is a crucial step in any investigation as it can significantly impact the direction and success of the interview. To ensure objectivity, it is important to categorize and organize evidence. Direct evidence such as DNA, fingerprints, or eyewitness testimony directly links the suspect to a crime scene or act. Circumstantial evidence indirectly suggests the suspect's involvement, such as inconsistencies in the alibi, financial records, or digital footprints (Heller, 2006). Character evidence provides insight into the suspect's personality, past behavior, or reputation but may not be admissible in court (Anderson, 2011). When analyzing evidence, it is important to assess its strength and whether it is independent or corroborative. Independent evidence is evidence that stands alone (e.g., fingerprints), while corroborative evidence supports other findings (e.g., alibi verification) (Walton, & Reed, 2008).

When using the SUE technique, it is crucial to assess the strength of the evidence. The evidence should suggest misconduct rather than providing unquestionable proof of wrongdoing. If the evidence were conclusive proof of a crime, the SUE technique would not be necessary to establish that deceit had occurred (evidence criteria) (Hartwig & Voss, 2017).

Some of the evidence found in a robbery investigation is described below (Table 1). Likewise, it describes how the SUE technique can assist/help to plan how to strategically disclose evidence.

Table 1. Use of evidence in the SUE technique

Source of evidence	The following items may be discovered and collected at the intervention place/crime scene: physical or circumstantial evidence (Samples)	The probative value of the evidence in legal and forensic settings	Physical or Circumstantial Evidence	In general, the item in question can be used for the following purposes:	SUE
Crime scene (victim´s corpse, clothing, and incident location) (Murillas, 2022)	Closed Circuit Tele Vision (CCTV) records from a neighbor's house	The probative value of CCTV recordings in legal or forensic settings is the capacity of the recording to prove or disprove a fact in a legal proceeding	Physical evidence. (Nieuwkamp, & Mergaerts, 2022)	The use of CCTV recordings can serve to corroborate or refute witness testimony, identify suspects, and reconstruct the events of a crime	1) Establish that a person was at the place or had physical contact with the victim or other objects. 2) Establish the actions that occurred at the place, at the time, and date of the recording (*Alibies*). 3) Establish the identity of the people involved if the quality of the recording allows it. 4) Establish the context to explain the events depicted in the recording. 5) Establish the location of the recording can help to identify the people and objects in the recording (*Alibies*)
Suspect	Alibi/ Narrative	The probative value of a suspect narrative relies on whether it can prove or disprove a fact in a legal proceeding. Suspect testimony can be a valuable tool in criminal investigations, but it is important to carefully consider the probative value of the testimony before relying on it because many factors can affect the probative value of suspect testimony, including credibility, motivation, as well as	Circumstantial evidence.	1) Identification of the witness *(People)*. 2) Identification of the places where the suspect was at the time of the crime *(Locations)*. 3) Identification of actions. What was the suspect doing when the crime occurred? 4) Identification of times.	1, 2, 3 & 4) Allows to compare the suspect´s statement with the evidence

Source of evidence	The following items may be discovered and collected at the intervention place/crime scene: physical or circumstantial evidence (Samples)	The probative value of the evidence in legal and forensic settings	Physical or Circumstantial Evidence	In general, the item in question can be used for the following purposes:	SUE
		quality of the Investigative Interviewing or Interrogation technique used		Where was the suspect at the time the crime happened?	
Victim & eye-witness (cashier)	Narrative	The probative value of victims' narratives in legal settings is the extent to which they can assist in establishing the facts of a case	Circumstantial evidence	1) Identification of witnesses *(People)*. 2) Identification of the places where the victim was at the time of the crime *(Locations)*. 3) Identification of actions. What was the victim doing when the crime occurred? 4) Identification of times. Where was the victim at the time the crime happened?	1, 2, 3 & 4) Allows to compare the victim´s statement with the evidence
Spent casing of a firearm/ weapon	Fingerprints	The probative value of fingerprints in legal and forensic settings is high. Fingerprints are one of the most reliable forms of physical evidence and can be used to convict criminals in a court of law	Physical evidence	Fingerprints can be used to identify the person who left them, even if the crime happened a long time ago	Allows the comparison of the suspect's statement with the evidence

Strategic Questions

The questions asked will vary depending on the case, however, it is recommended to use open questions that allow for a free narrative in all cases. The free narrative technique is a questioning approach designed to elicit an uninterrupted account from

a witness, victim, or suspect. The primary objective is to allow the interviewees to freely narrate their story in their own words, using an open-ended questioning style such as TED. This style includes phrases such as 'tell me', 'explain', or 'describe what happened' (Walsh & Bull, 2015). This type of questioning helps establish rapport and prevents the interviewer from influencing the narrative. It allows for minimal interruptions, permits supportive listening, eliminates suggestibility, and influence evasion as deceptive cues.

In order to obtain a comprehensive account of the event, it is recommended that the funnel-line questioning approach be employed (Hartwig & Granhag, 2023). In other words, the questioning should commence with broad, open-ended questions that encourage a free narrative and subsequently transition to more specific questions that address the evidence without disclosing it (Hartwig & Voss, 2017). It appears that the utilization of targeted and direct questioning represents an efficacious methodology for the discernment of inconsistencies between a suspect's assertion and the evidence presented. The probability of a liar providing a contradictory account is greater when the question is of an incriminating nature.

Example 1:

The following structure was inspired by the work of Luke and Granhag (2021) and Hartwig and Granhag (2023).

"Hello, my name is Eduardo. I´m investigating an incident that took place at the Moe´s liquor store. Last Friday, there was criminal activity at the place, and we believe that you may have been involved, so I´d like to ask you a few questions if you agree".

Funnel-line questioning approach

1) Broad Open-ended questions

"Please describe, in as much detail as possible your whereabouts yesterday evening?"

*This is a broad, open-ended question that should allow the interviewee to describe the event in their own words (free narrative).

2) Probing questions

"Were you in the vicinity of Moe liquor store around 7 pm?"

*This question narrows the focus to the location and time of the crime without directly revealing that the interviewer has specific information.

3) More Specific Question

"Did you notice anything unusual happening at the liquor store?"

*This question further probes the suspect's knowledge of the event without disclosing that a robbery occurred.

4) Closed questions

"Did you enter the convenience store at any point yesterday evening?"

*This direct question requires a yes or no answer, potentially leading to a denial if the suspect is guilty.

5) Evidence-Focused Question (Bottom of the Funnel)

"We have reason to believe that the robber was wearing a black jacket with a large tongue patch on the back and blue jeans. Does that sound familiar to you?"

*This question directly challenges the suspect with a piece of evidence, increasing the likelihood of eliciting inconsistencies or contradictions if they are lying.

6) Closing

"Right now, I have no more questions for you. Is there anything you want to tell me before finishing this interview? This interview is over, thank you so much for your time and patience, please stay here until I come back."

The disclosure of evidence

In a practical setting, interviewers may possess critical evidence that points toward a suspect's guilt. Therefore, it is crucial to organize and understand how to use evidence during an interview (p*re-interview assessment*) to elicit cues to deception and truth (Granhag et al., 2013). Deciding *when* and *how* to disclose is a crucial factor to consider. If evidence is presented too early in the interview, a guilty suspect can tailor their statement to include a non-incriminating account that fits the evidence (Walsh, & Bull, 2015). Hence, it is important to exhaust the suspect's story before introducing any evidence-related information. Only after a full account from the suspects is obtained, evidence should be disclosed. This is likely to increase state-

ment-evidence inconsistencies among guilty suspects, but not among innocent suspects (Oleszkiewicz, & Watson, 2021). At that stage, it can be determined that statement-evidence consistencies are indicative of honesty and statement-evidence inconsistencies are indicative of deception (Deeb et al., 2018; Hartwig et al., 2006; McDougall, & Bull, 2015; Vredeveldt et al., 2014).

In the context of investigative interviews, the strategic presentation of evidence assumes great importance in the pursuit of uncovering the truth. In regard to the issue of the number of pieces of evidence disclosed in interviews, there are two principal approaches, which may be broadly classified as follows: the first involves the gradual revelation of all evidence, with each piece being disclosed on its own merits (*Incremental use of total evidence/Sequential evidence disclosure*); the second entails the disclosure of a single piece of evidence at a time throughout the course of the interview (*Incremental use of one piece of evidence/The incremental single evidence focus approach*).

- Sequential evidence disclosure is a method whereby evidence is introduced in a sequential manner, facilitating the construction of a coherent narrative and aiding in the resolution of complex cases or the establishment of timelines. This approach entails the gradual presentation of the total evidence, commencing with Evidence A, then B, and so forth.

- The incremental single evidence focus approach involves the gradual revelation of a single piece of evidence (A) at a time throughout the course of an interview. This process can be repeated with evidence B and C, and so forth. This enables the interviewer to assess the interviewee's credibility. The Evidence Framing Matrix (EFM), a tool designed to facilitate the strategic organization of evidence in investigative interviews, can be employed for this purpose.

Organizing evidence for tactical disclosure using the Evidence Framing Matrix (EFM)

The SUE technique suggests arranging evidence in the order of disclosure (tactical disclosure), beginning with vague evidence (such as evidence that the suspect was in the general area where the crime occurred) and gradually introducing more precise evidence (e.g., the suspect's fingerprints were recovered from the crime scene) (Granhag, 2010; Vredeveldt et al., 2014). To achieve tactical disclosure of evidence, Granhag et al. (2013) developed the Evidence Framing Matrix (EFM).

As shown in Figure 1, this technique allows interviewers to use evidence from two aspects. The first aspect is the strength of the source of the evidence (weak source, e.g., we have information; or strong source, e.g., we have a CCTV recording). The second is the degree of specificity (low specificity, e.g., we have information that locates you in the municipality of Xoxocotlán; or high specificity, e.g., we have information that locates you at Oaxaca airport). Disclosing evidence incrementally, from a weak source/low specificity to a strong source/high specificity will result in lying suspects having to change their story (within-statement inconsistencies) so that their statement fits with the evidence revealed to them (Polman, 2021).

Expressed differently, during disclosure, questions are composed for each piece of evidence, beginning with a general question, and progressing to more specific questions. This is referred to as framing evidence: a general-framed question (Were you in the city of...?) is followed by a more specific question (Were you in the neighborhood of...?) and subsequently by disclosure of the piece of evidence (Your fingerprints were recovered at the crime scene) (Granhag et al., 2013).

Arranging evidence from vague to precise and disclosing it using a general-to-specific questioning strategy magnifies cues of deception and truthfulness while increasing the amount of information obtained from the suspect. Strategic disclosure of evidence prompts lie-tellers to shift their withholding strategy to become forthcoming, adapting to the evidence now aware the interviewer already has (Bull, & Dando, 2010; Granhag et al., 2004; Hartwig et al., 2007).

Note that a piece of evidence that is in its original shape and form, characterized as a weak source and has low specificity will be very difficult to disclose incrementally, and the SUE technique requires at least one piece of evidence to be applied (Granhag et al., 2013).

The authors of this article have successfully used the SUE technique with a single piece of evidence, as well as with several other pieces of evidence arranged in a vague-to-precise disclosure order. Each of the pieces of evidence was framed with general-to-specific questions. There may also be times when introducing all the evidence held by the interviewer is not in the best interests of an ongoing investigation, depending on the type of suspect being interviewed; all this highlights the importance of correctly framing the evidence available for disclosure (Luke et al., 2013).

The authors do not advocate the use of false evidence, minimization or maximization of the seriousness of the crime, bait questions, or deception during interviews.

Challenging the suspect with inconsistencies

When challenging the suspect with contradictions between their statements and the evidence, the interviewer should ask for an explanation of the contradictions with a non-judgmental and non-accusatory demeanor (Luke, & Granhag, 2022). The authors encourage interviewers to always allow suspects, regardless of whether they are victims, witnesses or suspects the opportunity to explain inconsistencies. Inconsistencies can be verbal cues to deception, but they are also a normal memory phenomenon (Fisher et al., 2012; Hartwig & Granhag, 2023), meaning that inconsistencies in a person's speech can be a sign that they are lying, but equally, they can be caused by normal situations of memory processes. In other words, a truthful person might forget a small detail about an event or misremember the order of events.

Eliciting new information through the Strategic Use of Evidence

Shift of Strategy (SOS) Technique

An alternative evidence-based technique for obtaining new information from the suspect is the Shift of Strategy (SOS) Approach. This methodology is an updated version of the SUE-Confrontation technique (Tekin, 2016).

The SOS approach is a technique designed to elicit more information from suspects by creating a social environment that motivates them to maintain their credibility. It also creates the impression that the interviewer knows everything (see also Scharff technique; Oleszkiewicz et al., 2014) by gradually disclosing the evidence (Granhag, 2016; Luke, 2021) and making the suspects feel that they have no choice but to cooperate to maintain their credibility. The SOS approach consists of dividing the testimony into three parts (before the event, after the event, and during the event/critical part). Subsequently, the interviewer will first obtain a free narrative about what happened before the event and will show evidence reactively, i.e., if the interviewer hears an inconsistency with the evidence, they will let the suspect know. The interviewer will then do the same for the other two parts, leaving the critical part till the end. In this way, the interviewer will make the suspects believe that they know everything by gradually disclosing the evidence, thus encouraging the extraction of new information (Luke, & Granhag, 2022).

Strategic Use of Evidence Framework

The SUE interview protocol is dynamic, and the number of phases or stages depends on the interview objectives. These objectives are strategically planned during the pre-interview assessment. It is important to note that while the SUE could use a varied number of phases, they should not be considered tailored stages. See different examples below.

Example 2:

Phase 1 ***(****the following structure was inspired by Granhag, & Hartwig, 2015)*

- The suspect's perception of the evidence is uncertain: "The interviewer may have some information, but the extent and nature of it is uncertain".
- Employ SUE tactics: Evidence is withheld, and free recall is requested.
- The suspect's perception of the evidence is unclear: "The interviewer doesn't mention any evidence; they may have less information than I thought".
- The suspect's counter-interrogation strategy remains unknown: Do not provide any information that could be incriminating.
- Verbal responses from suspects may be influenced by what they choose to leave out.

Phase 2

- The suspect's perception of the evidence is unclear: "It is still not very clear how much and what information they have".
- Employ SUE tactics: To use evidence effectively, it is important to keep withholding evidence, ask for a free recall, consider alternative explanations, and ask specific questions.
- The suspect's perception of evidence is changing: "They may have less information than I thought".
- The suspect's counter-interrogation strategy: "*Deny* any incriminating actions".
- The suspect's verbal response will be colored by the inconsistency between the statement and the evidence.

Phase 3

- The suspect's perception of evidence is unsure: "It is still not very clear how much and what information they have".
- Employ SUE tactics: Withhold the evidence, ask for a free recall, exhaust alternative explanations, ask specific questions, and disclose under the EFM.
- Suspect's perception of evidence: "They have more than I thought".
- Suspect's counter-interrogation strategy: "I must change my previous statement so as not to contradict the evidence presented to me".
- The suspect's verbal response will be colored by within-statement inconsistencies.

Phase 4

- Employ SUE tactics: The suspect is confronted with inconsistencies within the statement and/or between the statement and the evidence (this is repeated for two or more themes of evidence).
- The suspect's perception of the evidence: "They have more information than I thought, it is better to start giving them the information they already have to avoid contradicting it".
- Employ SUE tactics: Introduce a new topic, a topic for which the interviewer lacks critical information.
- Suspect's perception of the evidence: "I'm sure they have more information on this theme than they are willing to disclose".
- Suspect's counter-interrogation strategy: "I need to avoid being confronted with more inconsistencies, it´s better to say what they already know".
- The verbal response will be characterized by the suspect unintentionally revealing information that is new to the interviewer.

Case background example

One Friday night (September 25), Jane Doe left her office after 11:00 p.m. She was walking alone from work to her home, located at 68 John F. Kennedy Blvd, Jersey

City. Two blocks from home she stopped at Moe´s liquor store on Journal Square (46-78 John F. Kennedy Blvd) in Jersey City, New Jersey, which is open 24/7. Once inside, she saw a man with short blonde hair, blue eyes, and a red beard wearing a black jacket and blue jeans. She also remembers that the jacket the man was wearing had a big patch of a tongue on the back and he had a tattoo of a dragon with a dagger on the back of his hand.

The guy was arguing with a blonde woman about money in front of the store cashier. She could hear the young man with the beard yelling at the woman that the money she brought was not enough and that she would have to work more if she wanted to be with him. Jane continued on her way until she found the refrigerator at the back of the store, where she picked up a milk carton. Afterward, she walked to the cashier to pay for the milk, then she left the store and continued on her way home.

Minutes later, and a few steps from the main entrance of her house, a man stopped in front of her. The man was wearing a mask and asked her for her purse, threatening her "Give me the bag or I'll kill you". At the same time, he drew a firearm and shot at the ground. After the event, Jane called emergency services (911) and stayed at the scene to give her statement to the police.

In her statement, Jane described the man as approximately six feet tall, noting that he appeared thin and had a strong voice with a southern accent. She added that the man had short blonde hair, blue eyes, a red beard that could be seen under the mask and was wearing a black jacket with a patch of a tongue, blue jeans, and heavy boots. Also, she mentioned that he had a tattoo on the back of one of his hands, a dragon entwined around a dagger and that he looked like the guy she saw minutes earlier arguing with a girl in the store. She also said her purse was white with gold edges and made by Louis Vuitton. She added that the cost of the purse was approximately $1,000 and inside it were credit cards, her driver's license, and $300 in cash. She said what worried her most was the driver's license since that document contained personal information such as her address.

Police began the investigation and days later arrested a suspect (Mr. Perez) based on eyewitness testimony (Jane), CCTV records, and fingerprints from a gun casing recovered at the crime scene.

Pre-interview Assessment of Jane Doe Case Background

Step 1: Gather evidence. The first step is to gather as much evidence as possible about the case. ***Step 2***: Analyze the evidence. Once the evidence is gathered, it must be analyzed to determine its significance. This includes identifying the strengths and weaknesses of the evidence, and thus determining how it can be used tactically to support the investigation.

Step 3: Develop a plan. This plan should include the following: The specific evidence that will be used, the order (time), and the form (how) in which it will be presented, as well as the technique that will be used to present the evidence, in this example, we used the EFM.

Step 4: Implement the plan. This means presenting the evidence in a clear, concise, and strategic manner.

In the Jane Doe case, one of the pieces of evidence was a CCTV recording. In this case, the evidence meets the criteria to be used with the EFM (as it is not decisive proof of the robbery, nor its shape and form, it has different levels of strength and degrees of precision, thus it can be disclosed incrementally). For example, the first frame of evidence in the Jane Doe case could be a combination of a low degree of specificity and a weak source of evidence (Figure 1, LS/WS quadrant), since we have information that tells us that the suspect recently visited a liquor store in Jersey City. The second frame of evidence can be a combination of a high degree of specificity and a strong source of evidence (Figure 1, quadrant HS/SS), i.e., CCTV footage that tells us that last Friday, September 25, the suspect was at 68 John F. Kennedy Blvd.

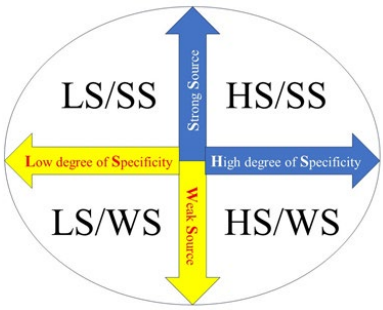

Figure 1. Characteristics of the Evidence Framing Matrix (EFM) that allows us to understand the different ways of presenting evidence considering the two aspects of *Source* and *Specificity*, in four quadrants (Low Specificity/LS), (Hight Specificity/HS), (Weak Source/WS), (Strong Source/SS) (*Adapted from Granhag*, 2010 & Granhag et al., 2013).

Interview with the suspect
Introduction

Interviewer: "Hello, my name is Eduardo. I´m investigating an incident that took place at the liquor store. Last Friday, there was criminal activity at the place, and we believe that you may have been involved so I would like to ask you a few questions if you agree."

Suspect: "Yes, of course."

Interviewer´s open question: "Tell me everything you did last Friday, September 25."

Suspect: "I got up at nine in the morning, I know it was late, but it was my birthday, and the day before my boss gave me the day off, so I didn´t have to go to the office. That day I had breakfast at home, later I watched a movie, and then went back to sleep until almost 1:00 p.m. When I got up around 1 pm, the first thing I did was call my girlfriend to invite her to go eat. She accepted and told me she would be home at 3 pm. After I hung up, I took a shower and waited for Ady (girlfriend) to arrive. She arrived on time, and we went to eat Chinese food at Shun Lee West on 43 W 65th St, New York. After that, we walked a couple of blocks to get into the New Plaza Cinema at 35 W 67th St, New York to watch the movie Meg 2. The film finished almost at 8 pm and at the end of the day, we went to my apartment (located in Union Square) around 9:30 pm. Once inside, we drank a couple of beers and then we fell asleep."

In this example, we will focus on a topic that the suspect did not mention in his initial narrative (the robbery). A spiral questioning should be done about his activities after the movie theater because the suspect omitted information (avoidance strategy).

Interviewer´s open question: "Please describe to me in detail everything you did on Friday, September 25, from the time you left the cinema until you went to sleep.

Suspect: "Hmm... let me think about it... I remember when we left the cinema it was raining very hard, so I decided to go in the car to get a black jacket and a sweater for my girlfriend. Then we went to a nearby restaurant to have a drink and waited for the rain to stop. We stayed there for a while and then we went to my apartment to drink some beers, and that's it."

Interviewer´s probing question: "Where were you between 11 and 12 p.m. on Friday, September 25?"

Suspect: "Asleep at home."

Interviewer´s closed question: "Are you sure you didn't leave your apartment after 10 p.m. on Friday, September 25?"

Suspect: "Yes."

Disclosure of evidence by the interviewer and request for an explanation of inconsistencies

***Interviewer*:** "Mr. Perez, we have information suggesting that you were in Jersey City on Friday night, September 25. Can you tell me about that?"

Suspect: "I was not in Jersey City on Friday, September 25."

Interviewer´s disclosure of evidence: "We have CCTV footage that tells us that last Friday, September 25, you were at Moe´s liquor store in Jersey City. Can you explain to me how something like this happened?"

Suspect: "No comment." *(This type of response is considered a Counter-Interrogation Tactic [CIT]. For more information, see Alison et al.,2020).*

Interviewer´s probing question: "*Why were you at 68 John F. Kennedy Blvd. on the night of September 25?"*

Suspect: "Maybe the date of the CCTV footage is wrong."

Interviewer´s closed question: "Are you sure you didn't walk by 68 John F. Kennedy Blvd, Jersey City, on Friday, September 25?"

Suspect: "Yes."

Interviewer: "Mr. Perez, we have some evidence that suggests that you were outside the victim's house the night of the robbery that took place in Jersey City on Friday night, September 25. Can you tell me about that?"

Suspect: "I was not at the victim's house the night of the robbery."

Interviewer statement: "I understand what you´re saying, but our evidence suggests otherwise."

***Interviewer*:** "Mr. Perez, we have a fingerprint expert who has identified your fingerprints on a gun casing found outside the victim's house at 68 John F. Kennedy Blvd, in Jersey City. Can you explain to me how this is possible?"

Suspect: "Those are not my fingerprints."

Interviewer statement: "We're pretty sure they are, Mr. Perez. The fingerprint expert has been doing this for over 20 years and he's never been wrong."

***Suspect*:** "No comment." *(This type of response is considered a Counter-Interrogation Tactic [CIT]. For more information, see Alison et al.,2020).*

Interviewer statement: "Well, I think you know what you need to do. You need to describe to us what happened the night of the robbery."

Suspect: "As I told you, you have the wrong suspect. On September 25, I was with my girlfriend almost the entire time, from when she picked me up at my apartment until we went to bed. She can corroborate my story. In fact, the only time I was separated from her was when it started raining, and I had to get my red jacket (*within-statement inconsistency*) and her sweater out of the car. We spent the rest of the time together; you can ask her, and she will tell you the truth.

By the way, I remember we went to Jersey City (*within-statement inconsistency*). We went to see a friend of mine who has a gun shop, I was thinking of getting a gun for safety reasons. Once inside, I talked to my friend about the best options, and he also gave me some shells. Once my friend gave me the information I wanted, my girlfriend and I decided to go to a nearby store to get some beers. Then, I drove down John F. Kennedy Boulevard to the apartment, and I remember that somewhere along the way I threw away one of the shell casings that my friend had given me (*within-statement inconsistency*). It´s likely that the cameras caught me passing near the house of the person who was robbed, and maybe I threw the shell casing near the crime scene, and that's why I´m here, but I didn´t do it."

Closure

Interviewer: "Right now, I have no more questions for you. Is there anything you want to tell me before finishing this interview?" ... "This interview is over, thank you so much for your time and patience, please stay here until I come back."

Conclusions

The SUE technique is an empirically validated information-gathering framework that adheres to science-based interview methodologies, i.e., elicits a free recall and allows the suspect to explain any inconsistencies.

We discussed the importance of withholding evidence early in the interview. This should convince guilty suspects that there is no potentially incriminating evidence against them, thus allowing them to provide free-flowing statements with no commitment to giving evidence (e.g., not being obliged to give statements that fit with the evidence). This should enhance the opportunity for statement-evidence inconsistencies, which guilty suspects are unlikely to be able to explain.

Incrementally introducing evidence may suggest to the suspects that the interviewer has more information than they initially thought, and therefore, they may start talking more openly. This should resist their counter-interrogation strategies and further increase statement-evidence and within-statement inconsistencies among the guilty. Only then can interviewers feel more confident that the suspect is deceptive.

In addition, withholding disclosure of evidence early in the interview safeguards innocent suspects from being misjudged as guilty. For some innocent suspects, being confronted with evidence early on can evoke an anxious response, and they may not be able to clearly explain any inconsistencies. Clarifying all aspects of a suspect's story before disclosing evidence should in many cases explain inconsistencies, particularly among the innocent.

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Reports

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EUROPEAN
POLYGRAPH
PUBLISHED SEMI-ANNUALLY
2025 VOLUME 19 NUMBER 2 (62)

DOI: 10.2478/EP-2025-0011

Report on the 22nd World Congress of Psychophysiology, IOP 2025

The 22nd World Congress of Psychophysiology, organised by the International Organization of Psychophysiology (IOP) in cooperation with the Jagiellonian University, was held in Kraków from 8 to 11 July 2025. The event gathered around 400 participants from over 40 countries, including leading researchers, early-career scientists, and representatives of technological companies operating at the intersection of cognitive sciences, psychology, psychophysiology, neuropsychology, and medicine.

Professor Robert J. Barry, IOP President and world-renowned authority in psychophysiology noted for his work on electroencephalography (EEG), stimulus processing, and attentional mechanisms, delivered the opening lecture of the congress. His address, "From Prestimulus EEG Oscillations to ERPs and Behaviour in the Go/NoGo Task", presented findings from many years of research on the relationship between brain activity and behaviour in cognitive paradigms.

The International Organization of Psychophysiology is a global scientific association whose mission is to advance research on the relationships between mental processes and the physiological mechanisms of the body. It regularly organises global congresses and scientific symposia, and supports publication of research through its flagship journal, the International Journal of Psychophysiology. Held biennially, the IOP congresses are among the most important international fora for exchanging expertise in the field.

During the four days of sessions, several dozen thematic panels were presented. They covered the latest courses of research in psychophysiology, neuroscience, and experi-

mental psychology. Symposia devoted to individual differences in cognitive control, emotion regulation, and the application of EEG and fMRI in diagnosing disorders of consciousness, personality, and decision-making processes drew significant interest.

A prominent thematic strand concerned the psychophysiology of emotion researching the effects of stress, sleep deprivation, and physical activity on cognitive performance. The programme also featured panels on such emerging technologies in brain research as neuroadaptive educational systems, human–computer interfaces, and methods of non-invasive neuromodulation.

For the first time in the history of the International Organization of Psychophysiology, the agenda included a dedicated panel on the detection of deception. It was chaired by dr John Palmatier of Nova Southeastern University (US), an eminent psychophysiologist and expert in the detection of deception and psychophysiological methods of lie detection.

Dr Palmatier's panel addressed both the theoretical foundations and practical applications of the Comparison Question Test (CQT) and the Concealed Information Test (CIT). The speakers were Professor Robert J. Barry, Professor Jan Widacki, and Michał Widacki. Their presentations discussed the practical limitations of CIT protocols, memory-related factors affecting polygraph examinations, and the framework of Preliminary Process Theory (PPT) explaining the mechanisms underlying physiological responses associated with cognitive and emotional processes in detection of deception tasks.

The inclusion of the panel on the detection of deception represents a significant step in broadening the interdisciplinary profile of the IOP. The combination of neurocognitive theory, analyses of autonomic responses, and research on memory and attention was welcomed with notable approval. Palmatier's session expanded the thematic scope of the congress, opening new options to research into credibility assessment, emotions, and decision-making processes in psychophysiological contexts. Very likely, it was the first time when forensic psychophysiology was formally recognised as a subfield within what is generally construed as psychophysiology.

Michał Widacki

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EUROPEAN
POLYGRAPH
PUBLISHED SEMI-ANNUALLY
2025 VOLUME 19 NUMBER 2 (62)

DOI: 10.2478/EP-2025-0012

Report from the 59th Seminar of the American Polygraph Association (APA), San Diego, August 2025

The 59th annual seminar of the American Polygraph Association (APA) was held in San Diego, California in August 2025. The event gathered several hundred of polygraph specialists from virtually all regions of the world, including experts from Poland.

Its agenda comprised numerous presentations, discussion panels, workshops, and case studies devoted both to professional practice and the latest scientific developments in the field of polygraph examinations. Subjects covered included the impact of legal changes concerning cannabis legalisation on pre-employment screening procedures, polygraph assessments in financial crime investigations, and methods for detecting deception attempts during screening and investigative testing.

In the scientific and methodological section, Kristine Smith delivered a detailed presentation on numerical (quantitative) interpretation of polygraph charts. Considerable attention was also drawn to contributions on the Modified Integrated Truth Technique (MITT) and the Concealed Information Test (CIT). Raymond Nelson's presentation, outlining contemporary, evidence-based approaches to analysing physiological signals deserves a special mention. In turn, Russ Warner focused on methodological and statistical aspects of polygraph research while discussing the importance of decision-making based on statistical data in organisations that employ polygraph testing.

One of the seminar's thematic strands addressed pre-employment testing, differences between public- and private-sector practices, as well as ethical and technical issues associated with testing minors. Many contributions took the form of case studies.

One of the key moments of the seminar was the announcement of the election of the new President of the American Polygraph Association, Pam Shaw, who has taken the helm of the organisation for the current term. Her appointment signals the continuation of APA's strategic direction centred on professionalisation, standardisation of procedures, and the integration of the international milieu.

Pam Shaw is a licensed polygraph examiner with extensive experience in law enforcement and in training polygraph professionals. She holds a bachelor's degree in Exercise Science and a master's degree in Allied Health Education from Eastern Kentucky University. For approximately fifteen years, she was affiliated with the Kentucky Law Enforcement Council, where she served as Testing Services Section Supervisor. At that time, she conducted numerous polygraph examinations for over 400 law-enforcement agencies in Kentucky and oversaw the state's polygraph quality-assurance programme. She also served as Director of the Kentucky Institute of Polygraph Studies. For many years, Pam Shaw has been active in the APA structures, serving in various roles in its Board for over fifteen years. She has also worked with local organisations, including the Kentucky Polygraph Association, where she has held both the presidency and vice-presidency. In the field of education and training, Pam Shaw has served as an adjunct professor at the Texas Department of Public Safety Polygraph School and as Principal Primary Instructor at the Singapore Ministry of Defence Centre for Credibility Assessment. She is also the founder and owner of Shaw Polygraph Services, Inc, and ProSource Alliance PTE LTD (Singapore), companies specialising in polygraph training and services. She is well known within the Polish polygraph community, for whom she has conducted professional training.

To wrap up, the 59th APA seminar constituted an important forum for the exchange of experiences among researchers, practitioners, and representatives of institutions

from various countries. The participation of Polish experts corroborated Poland's active engagement within the international polygraph community. The seminar demonstrated that the APA is stalwartly committed to regular training and the development of early-career practitioners. It may, however, be worth noting that future editions could place greater emphasis on scientific issues rather than focus predominantly on the practical aspects of examiner work. The advancement of polygraph methodology goes beyond honing professional practice as above all it hinges on rigorous scientific research. Without scientific work in psychology, psychophysiology, and even neurophysiology, no meaningful progress in detection-of-deception techniques can be achieved.

Michał Widacki

Obituary

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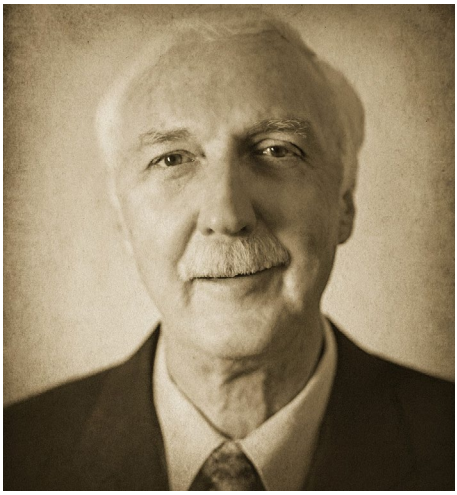
PUBLISHED SEMI-ANNUALLY
2025 VOLUME 19 NUMBER 2 (62)



John Charles Kircher Ph.D. (1951–2025)

On November 18, 2025 passed away John C. Kircher, respeted specialist in the psychophisiology of deception. From 1980s he was joined the University of Utah as an Assistant Professor. He was co-author (with David C. Raskin and Charles R. Honts) of the important book „Credibility Assessment. Scientific Researh and Applications" (2014), the author of many articles conected with detection of deception. In 2016 he published (with co-author D. Raskin) an article in our journal: „Laboratory and Field Research on the Ocular-motor Deception Test".

John C. Kircher was also mountain climber, and first of all nice man and good friend and colleague.

Our heart is simply broken at the news of his dead.

Editors of the European Polygraph

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For example (in references):

Reid, J., Inbau, F. (1966), *Truth and Deception: the Polygraph ("Lie-detector") Techniques*, Baltimore: Williams & Wilkins.

Abrams, S. (1973), Polygraph Validity and Reliability – a Review, *Journal of Forensic Sciences*, 18, 4, 313.

and (Reid, Inbau, 1966), (Abrams, 1973) inside text.

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POLYGRAPH
PUBLISHED SEMI-ANNUALLY
2025 VOLUME 19 NUMBER 2 (62)

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