

Confabulation: Connections between Brain Damage, Memory, and Testimony

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ABSTRACT

Confabulation is the act of honestly lying, providing information based on inaccurate memories whether those memories were provoked by questions or arose spontaneously (Moscovitch, 1989). Confabulation is not a function of the disturbed but an action that is part of the human condition. It is not uncommon to create and hold false memories, or even participate in the act of self-deception. Confabulation is simply an act of filling in the holes, creating a semblance of coherency, and improving the narrative (Gallagher, 2003). However, when this simple act enters the criminal justice system as the form of testimony, it can have a perverse long-term corrupting impact on the system resulting in an unintentional loss of liberty, and potentially even death. While there is no way to quantify how often confabulation results in false testimony, it is known that significant groups of individuals with brain damage predisposed to confabulate are regularly in contact with the system as perpetrators, witnesses, bystanders, and victims.

Confabulation is important in the context of the criminal justice system, since the veracity and reliability of testimony is crucial in proceedings geared towards understanding actions and events that have taken place during criminal evaluations and criminal trials. Recently, confabulation has been redefined as a wide range of errors in memory, including distortions, descriptions of false realities, and less dramatic errors such as the description of intrusions, embellishments and elaborations, and the paraphrasing of existing memories (Guerra et al., 2009). Simply, this is not the same thing as lying. Liars are aware of the falsehood of their statements; confabulators are not. This differs from malingering, which is commonly described as a conscious fraudulent production of physical or psychological symptoms to secure something desired (LoPiccolo et al., 1999; Gorman, 1982). In the forensic setting, the individual would fake amnesia, psychotic symptomology, or cognitive difficulty in an effort to escape interrogation or any criminal responsibility (Parwatar, 1985).

A testimonial confession is a critical piece of the conviction process and the most convincing evidence to juries (Kassin & Neumann, 1997). "The introduction of a confession makes other aspects of a trial in court superfluous," according to Supreme Court Justice William Brennan (*Colorado v. Connelly*, 1986). While it remains difficult to determine the exact number of individuals who have falsely confessed, in Europe 12% of prisoners allege to have falsely confessed (Gudjonsson, 2003), and a study of Icelandic students with Attention-Deficit and Hyperactivity Disorder (ADHD) identified 261 individuals that had falsely confessed to law enforcement (Gudjonsson et al., 2009). In the United States, "Perske's List" in its most recently updated form has grown to 75 documented false confessions of individuals with intellectual disability (Perske, 2011), and the Innocence Project reported as of April 17, 2014 that 25% of the 316 exonerated individuals were convicted based on false confessions (<http://www.innocenceproject.org>). Further, Kassin et al., found that false confessions appeared to have a corrupting effect on the entire criminal investigation resulting in subsequent errors associated with other evidence including; forensic science, eyewitness, and snitch/informant (Kassin et al., 2012).

The limitations of testimony, however does not end with the study of the false confession. In fact, testimony from the accused, the eyewitness, or the informant remains integral to the criminal justice system; despite knowing it is less than flawless (Wells & Loftus, 1984). This testimony often constitutes an important piece of information or evidence from which judicial cases are constructed. Differentiating confabulation from deliberate lying may aid in the process of uncovering truth and differentiating valuable from useless information. In order to identify these differences, a basic understanding is intended to create an awareness of the nature and existence of situations that could be more complex than they might first appear. What sometimes appears to be a deliberate lie may be, in reality, unintentional. There is heightened importance in the criminal justice system to identify confabulation by potential witnesses, and defendants themselves, in the form of false confessions. False testimony (false confession, false eyewitness, false informant/cooperating witness) was integral to the conviction of 195 of the 200 individuals that later had their convictions overturned as a result of the work of the Innocence Project (Garrett, 2008). While it is beyond reason to assume that all of the convictions were related to confabulation, thus far, it remains an unanswered question that needs to be explored. In working with psychiatric patients, the presence of confabulation needs to be strongly considered.

"Honestly Lying" - What is Confabulation?

Confabulation is the communication of falsely constructed answers and information by an individual recounting something he or she genuinely believes to be the truth (Anastasi,

2006). This phenomenon occurs through the replacement of gaps in memory with imaginary information (Gudjonsson, 1992), causing accounts that lack correspondence to real events. Essentially, a falsification of memories through guessing or the imagining of an event occurs; backfilling and assuming the reality of the imagined event turn into a “final product,” which is believed to be true by the individual recounting the events (Zannino et al., 2008). In effect, the mind appears to be filling in the missing memory with information that it recognizes should fit, thus explaining the situation and creating a robust memory of the event. Loftus and Palmer evaluated the importance of word choice when questioning a witness (1974). The word “smashed” was substituted for the word “hit” while questioning witnesses of car accident videos. Participants falsely recalled seeing broken glass at a greater rate when the word smashed was used (32%) than when the word hit was used (14%). They also judged the speed of the car to be nearly 7 mph faster when it was “smashed.” This is contrary to liars who are well aware of the falsehood of their statements (Zannino et al., 2008). The range of confabulation can be broad and contain errors in memory, distortions, and descriptions of false realities, as well as less dramatic errors such as the description of intrusions, embellishments, elaborations, and the paraphrasing of existing memories (Guerri et al., 2009).

Of course, a general awareness exists about the fallibility of human memory in regards to omission and commission, constituting either the forgetting of details and experiences or leading to the distortion of memories. While amnesia is a well-known and researched condition of memory loss, confabulation constitutes the pathologically exaggerated form of memory distortion and is less well understood (Fotopoulou et al., 2008). Memories of events that have not actually taken place may include vivid contextual and perceptual details, making the accounts appear as though they were true. Often, individuals claim that they are able to relive these memories and, in fact, sometimes act on or respond to their confabulations (Ciaramelli et al., 2007). Examples of this behavior may be seen in the bereavement over the death of an imaginary friend. Other emotional responses may include constructed memories and situations, such as the search for a phone number of an imagined person (Schnider 2003). These types of behaviors suggest confabulators subjectively experience memories as being real, and potentially base actions and decisions on false or distorted experiences (Goel et al., 2003).

Causes of Confabulation

Many existing theories attempt to explain the reasons and etiology of confabulation. A confusion of events due to a disturbed sense of chronology may cause confabulation when memories from an older time period are judged as currently relevant (Turner & Coltheart, 2010). Spontaneous confabulation, which does not result from an external cue, may be rooted in an impaired ability to filter information. Habits and recurring events may also play a role (Nahum et al., 2009). Another problem may be found in the difficulty to differentiate between incoming new information and information that has been stored in old memories. This old information, regardless of its relevance to the current topic, can often not be suppressed or filtered, and adds to the creation of the story. This process appears to be directly linked to confabulation (Schnider, 2008).

Spontaneous confabulation has been linked to an inability to recognize the temporal order of stored information, which results in erroneous recollections of different elements of memories that originally did not correspond (Schnider et al., 1996). In these cases, a persistent outpouring of erroneous memories occurs (Kopelman, 2010). Provoked confabulation depends on the search for information in deficit memory (Schnider et al., 1996), which results in fleeting intrusion errors or distortions that essentially arise in response to a challenge of the individual’s memory (Kopelman, 2010). Provoked confabulation occurs

when the individual is prompted for a response or has received external cues (Kessels et al., 2008).

Another form of confabulation is provoked, wherein the memory incorporates errors or distortions as a response to a challenge (Kopelman, 1987). While provoked confabulation occurs more frequently after brain damage, spontaneous confabulation has been linked to changes and lesions in the brain structure, particularly pertaining to changes in the basal forebrain, hypothalamus, and the dorsomedial thalamic nucleus (Schnider, 2008). Damage to the prefrontal cortex can lead to impaired memory of perceptual context features (Ciaramelli & Spaniol, 2009) and to difficulties in distinguishing memories from other mental products (Fotopoulou et al., 2007). This often occurs in confabulation with autobiographical content, such as the man who questioned his wife one evening about why she keeps telling other people that they are married, when they are not; the hospital employee who recounted regular visits from her parents although they had been dead for 4 and 20 years; or the 61 year old man who talked about having recently taken his girlfriend home to meet his parents (Kopelman, 2010).

Clinical Relevance

A number of neurologic and non-neurologic reasons exist that can potentially present causes for confabulation. Developmental impairment may constitute one of the many complex causes of confabulation (Gibbard et al., 2003). From a developmental perspective, telling tales is typical in younger children. Older individuals suffering from Fetal Alcohol Spectrum Disorder (FASD), or other neurological damages, may exhibit similar symptoms due to an arrested development thereby exhibiting behaviors that are appropriate for much younger individuals (Nedjam et al., 2004) and are congruent with appropriate age-related confabulation behaviors. We will turn to a brief discussion of some of the relevant clinical disorders that appear to be implicated in confabulation.

Fetal Alcohol Spectrum Disorder. Actual prevalence rates pertaining to the percentage of individuals with FASD who are incarcerated in the United States are unknown (Burd et al., 2004). One study estimated the prevalence of individuals with FASD to be as high as 10% in one federal correctional facility (MacPherson & Chudley, 2006). In another study of a selected population of delinquents undergoing mandated psychiatric or psychological assessments, the rate of FASD was 23.3% (Conry et al., 1999). Further, these individuals are often neglected, abused, and mistreated (LaDue et al., 1992).

Prenatal alcohol exposure has been associated with widespread neuropsychological deficits across several domains, causing significant impairment and disadvantages for affected individuals (Gibbard et al., 2003). Damages and deficits can impact general intelligence, memory, language, attention, learning, visuospatial abilities, executive functioning, fine and gross motor skills, and social and adaptive functioning (Guerri et al., 2009; Schnider, 2008). Impairments in verbal and nonverbal learning and memory may be connected to low IQ levels (Guerri et al., 2009). However, the individual does not have to suffer from a low IQ to express significant impairment, highlighting why many refer to FASD as an invisible disease. The lack of visible cues even after the first few meetings/interactions can lead to unreasonable assumptions and expectations (Sanders & Buck, 2010). Diminished intellectual capacity is a common neurocognitive finding (Mattson et al., 2011). Studies suggest that long-term retention of verbal information is intact; however, encoding processes may be impaired (Pei et al., 2008). Abnormalities in the frontal-subcortical pathway and damage to the left hemisphere have been linked to visuospatial processing deficits (Guerri et al., 2009; Mattson et al., 1996). Executive function and higher order cognitive processes are often impacted by

prenatal exposure to alcohol. Frontal-subcortical circuits that involve projections from other parts of the brain have been found to be highly vulnerable to the exposure of ethanol (Mattson et al., 2011; Fryer et al., 2007). Executive functioning is necessary to maintain adequate problem solving abilities for the attainment of future goals, and involves the ability to plan, organize, strategize, notice, contextualize details, and manage time and space (Welsh et al., 1988). Impairment of executive functioning can have devastating effects on individuals and the ability to comprehend or communicate effectively (Schonfeld et al., 2006; Jirikowic et al., 2008). These individuals have issues with impulsivity, inhibitory control, and generally fail to understand consequences (Rasmussen, 2005).

Difficulties are related to keeping track of time and simultaneous tasks, as well as skills related to planning, structure, and organization. Difficulties can include telling stories (e.g., verbal or written) or recounting situations and experiences in a detailed, organized, and sequential manner. Many existing theories attempt to explain the reasons and etiology behind this phenomenon. It appears that the individual is suffering from a disturbed sense of chronology. This confusion of events may cause confabulation when earlier memories are judged as currently relevant (Clare & Gudjonsson, 2010; Turner & Coltheart, 2010; Pedzdek et al., 2009; Fast & Conry, 2006). These difficulties can be accentuated in stressful situations where the mind attempts to problem solve; trying to remember, and the individual may be faced with faulty evidence of guilt (Kassin & Kiechel, 1996; Horselenberg et al., 2003; Nash & Wade, 2009).

Korsakoff's Syndrome. Korsakoff's syndrome is a neuropsychiatric condition characterized by severe amnesia in the absence of dementia (Krabbendam, et al., 2000). Patients suffering from Korsakoff's syndrome may exhibit severe confabulation behavior (Kessels et al., 2008). Studies indicate that a high percentage of patients present with spontaneous confabulation due to source memory impairment caused by temporal confusion (Kessels et al., 2008; Van Oort et al., 2009). In most cases, chronic alcohol abuse, in conjunction with malnutrition, causes lesions in the diencephalon, leading to problems with executive functioning and confabulation, due to memory issues (Van Oort et al., 2009). The identification of this executive dysfunction, the suspected direct connection to memory impairment, and the production of confabulations serve to enhance behavior caused by memory impairment and confabulation (Van Oort et al., 2009).

Dementia of the Alzheimer's Type. Confabulation occurs when memory is impaired (Kern et al., 1992). Often the individual is completely unaware of their disorder (Weinstein et al., 1994) confabulating when attempting to recall memories or make plans (Barba et al., 1999). Severity of cognitive decline appears to correlate with frequency of confabulation behavior (Tallberg & Almkvist, 2001). A study by Attali and colleagues (2009) implies that it is the encoding processes in the brain which may be disrupted in Alzheimer's patients and not the retrieval of memories, as might be presumed. Studies were conducted with patients by presenting them with three different kinds of fairy tales and asking them to recall the content. Alzheimer's Disease patients produced significantly more confabulations in the recall of a modified fairy tale compared with the recall of the two other stories. This points to a strong representation of over-learned and well-known information (Attali et al., 2009) and could mean that gaps in memory are filled in with experiences or knowledge pertaining to remote memory. When these patients were asked what activities they had planned for the day, their response often included well-established memories from their past (Kopelman, 2010).

Traumatic Brain Injury and other anatomical considerations. A recent study of 384 juveniles ages 16 to 18 years old in the New York City jail system indicated the incidence of TBI was approximately 50% (Kaba et al., 2014). Studies conducted with World War II veterans who had suffered brain injury, particularly frontal lobe damage, found correlations between impairments and confabulation (Glowinski et al., 2008). It can be assumed that any blunt trauma causing damage to the prefrontal cortex may trigger confabulation behaviors. However, some studies have identified situations in which the patient has not actually experienced structural damage to the prefrontal cortex, as revealed through the case study of a man who suffered the rupture of the left posterior communicating artery prior to exhibiting amnesic and confabulatory symptoms (Barba et al., 1997). This implies that vulnerability of areas in the brain through indirect trauma or deprivation potentially causes damage, which can result in impaired memory and possibly confabulation. Some patients exhibiting confabulation behavior experience disturbances of the cerebral anterior artery, which supplies the frontal regions of the brain (Glowinski et al., 2008). Cases of confabulation have also been reported in patients with herpes encephalitis, multiple sclerosis, and following suicide attempts involving hanging, in which the brain stem or spine are damaged or blood flow was reduced, resulting in brain damage (Glowinski et al., 2008).

Delusions. Delusions and delusional memories are not the same thing. While delusions can arise in a multitude of contexts and may be associated with paranoia or schizophrenia, delusional memories are rare (Kopelman, 1999). Either consisting of a true memory that is subject to deluded interpretation, or arising due to psychosis as a false memory (Kopelman, 1997). Although the underlying pathology of the disorders differs, Fotopoulou suggests that a complex interaction between emotion and lack of information may play a role in the creation of confabulation from a psychological perspective. Early adverse experiences and trauma may create persistent and enduring cognitive vulnerability, which might be linked to confabulation (Fotopoulou, 2010). Delusional memories can be differentiated from confabulations, because of the lack of executive dysfunction involvement (Kopelman, 1999).

Schizophrenia. Confabulation has also been witnessed in patients with schizophrenia, independent of intelligence (Nathaniel-James & Frith, 1996). Studies conducted with individuals suffering from this disorder show a significant increase of intrusion errors, typical for confabulation (Kopelman, 2010; Lorente-Rovira, 2010). A difference in the content of these confabulations was identified and they were often unrelated to the topic. The confabulations were also colored by the preoccupations typical to the individual's delusional beliefs and content, often appearing to be bizarre (Kopelman, 2010). Morias and colleagues (2004) have hypothesized that that confabulations may be less an issue of memory impairment, and more an issue with verbal comprehension difficulties in this patient population. In addition, some studies have found that schizophrenic patients are unable to differentiate plausible from implausible errors and, as a result, are unable to correct these errors (Kopelman, 2010).

Childhood sexual abuse, trauma, and the recovery of memories. Kopelman (2010) identified difficulties in the accurate retrieval of childhood sexual abuse memories, especially for those events that occurred during early childhood. Fragments of memories are likely to be inaccurate or distorted due to difficulties in location of these memories in a temporal or special context (Kopelman, 2010). Trauma has been known to affect memory and cause a wide range of memory impairments, including amnesia and dissociation (Davies et al., 1998).

Testimony: Suggestibility and Reliability

Increasing understanding of definitions, possible origins, and connections to brain functioning and emotional affect is important in order to create awareness about confabulation and its connection to reliability in communication. Further understanding is also necessary to curb the risk of false confession, false testimony, and to avoid the negative consequences thereof. There is a high risk of suspects exhibiting confabulatory behavior due to neuropsychological deficits taking responsibility for uncommitted acts. The risk of being misunderstood by police officers, lawyers, and courts can be minimized if comprehensive medical and legal reports are assessed regarding the individual's ability to testify adequately (Fast & Conry, 2006). Additionally, effort should be made by those performing the interviews to identify those with obvious deficits prior to the even unintentional disclosure of pertinent investigative data that has been kept from the public.

Suspects suffering from neuropsychological impairments are at a profound disadvantage and are vulnerable when interviewed or questioned by police. Impaired understanding of legal rights; susceptibility to acquiescence, suggestibility, and compliance can lead to confabulation (Clare & Gudjonsson, 2010). Suggestive questioning is highly unreliable and can lead to false testimony (Pezdek et al., 2009), especially since confusion in the temporal context tends to provoke unchecked responses to external cues (Kopelman, 2010). Studies have documented circumstances in which individuals make confabulated false confessions due to high suggestibility, long duration of the interview, circumstances related to amnesia, and a distrust in memories or lack thereof (Kopelman, 2010). Social motivational factors and interview dynamics have proven to be relevant in the development of false memories (Zaragosa et al., 2001). When incriminating evidence is presented to an individual with confabulation behavior, the individual is likely to internalize the evidence as truth, even when false, as a result of susceptibility to suggestibility (Kassin et al., 1996).

In order to obtain relevant information for the purpose of serving justice, it is important to be able to identify the difference between confabulation and lying. This short compilation of possible causes is intended to raise awareness about this complex problem. Potentially, the individual's reality can be misrepresented, regardless of whether the person is a suspect, a witness, or simply questioned with the objective of obtaining information. Although the testimony of some individuals may be false, this does not necessarily constitute lying, which at first sight, may appear to be contradictory. However, differentiating confabulation behavior from the deliberation of lying will bring us closer to the objective of identifying the veracity and reliability of testimony. Further research is needed and more training must be provided on the nature of confabulation pertaining to suggestibility, unreliable testimony, and self-incriminating statements. Awareness of potential pathologies that influence testimony and create unreliable testimony can easily be categorized and differentiated, and the criminal justice system may be enhanced through this awareness.

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