

**DEPARTMENT OF THE AIR FORCE
GENERAL COURT MARTIAL
AIRFORCE TRIAL JUDICIARY
JUDICIAL CIRCUIT**

UNITED STATES

v.

SSgt John Doe

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**DECLARATION OF
DR. PAUL SIMPSON, Ed.D.**

22 January 2020

I, Paul Simpson, Ed.D., declare under penalty of perjury:

1. I am Dr. Paul Simpson, a psychologist specializing in forensic and clinical psychology. I received my doctorate from Northern Arizona University in 1990 and have been a licensed psychologist in the State of Arizona since 1991. I have testified and/or consulted as an expert in approximately 400+ state and federal trials and over 70 courts-martial for the U.S. Airforce, Army, Marines, and Navy. In 1997 I authored a book on memory and suggestibility. I am an instructor for the State Bar of Arizona and have provided trainings on numerous topics, including thirteen presentations on the topic of Eyewitness Memory and twice regarding Alcohol Blackouts and Sexual Assault. For the past six years I have been an instructor for the U.S. Air Force's JAG school at Maxwell AB. This training has been part of their Advanced Sexual Assault Litigation Course (ASALC) and included alcohol blackouts and sexual assault. In addition, I have provided psychology professionals training regarding sexual compulsions / sexual offense in over 300 cities in all 50 states over a span of 11 years.

2. Through my education, training, and legal experience, I have become knowledgeable about the numerous impacts and manifestations that illicit drug use can have on the human body and related cognitive functioning. This includes the research findings related to MDMA (methylenedioxymethamphetamine - commonly known as "*Ecstasy*" or "*Molly*"). I have developed scientifically grounded, evidence-based expertise on the topic of MDMA's effect on event encoding and memory retrieval.

3. There has been significant research in the field of psychology regarding the effects that MDMA has on memory. A review of the scientific literature reveals 346 research articles specific to methylenedioxymethamphetamine and memory. Appendix A in this document With my training and experience in the specialized area of MDMA and memory, I am able to assist the defense in exploring dynamics and various phenomena specific to this specialized field of study. This field is highly technical and complex.

4. A large body of research shows that a person under the influence of MDMA maintains the functional capacity to engage in a wide array of complex and goal-directed activities, such as

carrying on a conversation, driving, or having sexual intercourse. However, the ability to encode, store and retrieve memories of these events can be significantly compromised. Thus, memory for parts or the totality of an event is jeopardized. Individuals under the influence of MDMA can remain conscious (as opposed to being passed out or unconscious) while maintaining the functional and behavioral capacity to engage in a wide array of complex, goal-directed behaviors. Their actions are engaged in while in a conscious state. Given that there is no way of knowing that an individual is in the midst of an MDMA induced blackout, their behaviors and actions appear fully volitional and intentional to an observer (and still can be 100% volitional and intentional).

5. MDMA can cause a person to perceive information inaccurately. It can also cause what is referred to as “*attentional compromise*,” which refers to the phenomena where a person will narrowly focus only on salient immediate stimuli at the expense of other contextual information. When this occurs, much of the contextual information is never encoded and subsequently will not be remembered.

6. The recollection of events (i.e., memory recall) is a reconstructive process. In other words, when an individual is asked to recall an event, it is not as if they go into their brain and pull an exact, carbon copy recording of what occurred. Rather, memories are recalled as a result of a reconstructive process. It is well-established in the psychological literature that when individuals are asked to describe or explain events or actions they may not readily recall, they may be prone and vulnerable to “*filling in the blanks*” when constructing their memories. This process of “*confabulation*” has been demonstrated in experimental, empirically-validated studies.

7. *Source misattribution* is a psychological concept in which a person does not accurately link the original source of a memory to what is later recalled and retold to others. There are many potential causes of source misattribution. A basic example would be an eyewitness hearing from the police that a suspect was carrying a gun and later coming to believe that the suspect was carrying a gun without actually having seen a gun. The use of MDMA is likely to increase the risk and vulnerability of a source attribution error. A person with fragmentary memory or complete memory disruption is particularly prone to making source attribution errors.

8. The concept of *transience of memory* is that memory generally deteriorates and gets worse over time. Research has shown that that a significant percentage of people experience major errors in their memory over the course of time, even for events that could be considered memorable. The memory issues associated with MDMA use can increase the potential for memories to be altered when recalled.

9. *Suggestion* and *suggestibility* refer to the psychological concept that memories can be affected and distorted by suggestion that is external to the individual. A person can suggest or insist that something occurred in a particular way or that an event should be conceptualized in a certain way and that can potentially lead an individual to recall their memories in a new light and cause distortion in their memory to conform with the suggestion. When external suggestion is applied to a situation that occurred when an individual was under the influence of MDMA the individual may be even more prone to suggestion because research has shown that individuals who are less certain of events are more prone to suggestion regarding those events.

10. *Hindsight bias* is the concept that a person will restructure their beliefs or understandings about an event in order to conform with information later obtained. There is significant research on the subject of hindsight bias that shows that a memory can be reconstructed to fit that person's current beliefs or knowledge. The context provided by the new information can restructure that person's understanding and beliefs about what they remember occurring.

11. *Motivated memory* refers to several different concepts in which a person may consciously or unconsciously have a motivation to distort a memory. Embarrassment, shame, or self-justification are factors that can motivate a person to reconceptualize past events or create inaccurate memories in order to prevent negative feelings and conform with other beliefs that individuals may have about themselves. The memory issues associated with MDMA can make this more likely to occur since an individual's memory of an event may be incomplete and/or distorted.

12. *Imagination inflation* is a concept in which a person thought about or imagined something occurring which did not actually occur, however, the individual later remembers that thing having occurred. A basic example of this would be someone intending to say something during a conversation but forgetting to say it and later, believing falsely that they actually said that thing during the conversation. The use of MDMA has the potential to increase the risk of this occurring due to other memory issues being experienced by someone in those states.

13. It is important to note that none of these aforementioned psychological concepts operate in a vacuum. Multiple concepts can interact to distort an individual's memory. For example, suggestion, hindsight bias, and motivated memory can all be applicable to a situation and lead a person to have a false and/or inaccurate memory about an event that occurred. Furthermore, MDMA - and the resulting memory issues that accompany its use - exacerbates the likelihood and vulnerability of memory distortions in these situations.

14. Although there is substantial individual variability in the effects of MDMA, my review of the scientific research and training would allow me to provide scientifically-grounded insights into these areas, insights that would be beyond the typical knowledge of a person without medical and/or psychological training.

15. I have discussed the case of United States v. Sergeant John Doe with his defense counsel and they have informed me of the charges and allegations in the case.

16. With regards to the allegation, I have been given the following hypothetical scenario.

a. At a party, A1C Susan Jones . . . She remembers the first part of the evening until approximately midnight. A1C Jones states that the next thing she remembers is waking up on a bed to someone performing oral sex on her. She then blacked/passed out again, to wake up later to Sgt Doe having coitus with her. She recalls resisting this and that she then went "back to sleep."

b. Upon awakening the next day, she had vomit in her hair and had urinated in the bed. She did not recall portions of the events of that night, though the following day she got "flashbacks" detailing the abovementioned memories.

c. Following these “flashbacks,” she spoke with an individual in her dormitory who told her it was sexual assault. She then went and talked to a SARC counselor, who also described the events as sexual assault and encouraged her to make an unsworn statement.

17. Based upon the hypothetical in the above paragraph, there are undoubtedly various psychological and cognitive phenomena at play that may have the real potential to distort and inaccurately skew both an individual’s memory of an event as well as their perception and characterization of an event. These opinions are based solely on the above hypothetical. Given that, my final opinion is subject to change based upon more complete information and the ability to review all relevant information in this case.

18. I would need 15 hours to review the evidence in this case and consult with defense counsel.

19. My calendar tends to fill out 4-5 months in advance, but I will work to accommodate any request from the trial court.

20. Please see Appendix A in this document for a

Executed this 23rd day of March 2022.

Paul Simpson, Ed.D.

APPENDIX A:

Brief Citation of Research Related to MDMA and Memory Problems

A review of the scientific literature reveals 346 research articles specific to methylenedioxymethamphetamine and memory. This appendix contains seven select articles that provide an overview of this body of literature.

MDMA (Ecstasy).

El-Mallakh, Rif S., et al.

Annals of Clinical Psychiatry, Vol 19(1), Mar, 2007. pp. 45-52.

Abstract:

Background: 3,4-Methylenedioxymethamphetamine (MDMA or Ecstasy) is a synthetic amphetamine analogue that is recreationally used to obtain a psychological effect of enhanced affiliative emotional response. Its use in Western countries appears to be increasing, particularly among young individuals. Methods: Pertinent basic and clinical literature is critically reviewed. Results: A significant body of literature suggests that the patterns of MDMA use differ from traditional drugs of abuse, with relatively uncommon dependence and escalation of dosage. Nonetheless, **MDMA is also neurotoxic with significant deleterious effects on serotonergic neurons, memory, and mood.** Despite this, there is a dearth of treatment strategies for both acute intoxication and consequences of longer term use. Conclusions: MDMA is an important drug of abuse that has a wide range of adverse consequences.

Ecstasy (MDMA) and memory function: A meta-analytic update.

Laws, Keith R. and Kokkalis, Joy.

Human Psychopharmacology: Clinical and Experimental, Vol 22(6), Aug, 2007. pp. 381-388.

Abstract:

A meta-analysis was conducted to examine the impact of recreational ecstasy use on short-term memory (STM), long-term memory (LTM), verbal and visual memory. We located 26 studies containing memory data for ecstasy and non-ecstasy users from which effect sizes could be derived. The analyses provided measures of STM and LTM in 610 and 439 ecstasy users and revealed moderate-to-large effect sizes (Cohen's *d*) of *d* = -0.63 and *d* = -0.87, respectively. The difference between STM versus LTM was non-significant. **The effect size for verbal memory was large (*d* = -1.00) and significantly larger than the small effect size for visual memory (*d* = -0.27).** Indeed, our analyses indicate that visual memory may be affected more by concurrent cannabis use. Finally, we found that the total lifetime number of ecstasy tablets consumed did not significantly predict memory performance.

The neuropsychology of ecstasy (MDMA) use: A quantitative review.

Zakzanis, Konstantine K. and Campbell, Zachariah.

Human Psychopharmacology: Clinical and Experimental, Vol 22(7), Oct, 2007. pp. 427-435.

Abstract:

A growing number of empirical studies have found varying neuropsychological impairments associated with use of 3,4-methylenedioxymethamphetamine (MDMA) use. We set out to determine to what extent neuropsychological abilities are impaired in MDMA users. To do so, meta-analytical methods were used to determine the magnitude of

neuropsychological impairment in MDMA users across pre-specified cognitive domains. **We found that cognitive impairment secondary to recreational drug use may result in what might be described as small-to-medium effects across all cognitive domains with learning and memory being most impaired. We also found that total lifetime ingestion of MDMA appears to be negatively associated with performance on tasks ranging from attention and concentration to learning and memory.** Implications and limitations of these findings are discussed.

Differential effects of ecstasy on short-term and working memory: A meta-analysis.

Nulsen, Claire E., et al.

Neuropsychology Review, Vol 20(1), Mar, 2010. pp. 21-32.

Abstract:

Quantitative analysis of studies examining the effect of ecstasy on short-term and working memory in the verbal and visuo-spatial domain was undertaken. Thirty verbal short-term memory, 22 verbal working memory, 12 visuospatial short-term memory and 9 visuospatial working memory studies met inclusion criteria. Ecstasy users performed significantly worse in all memory domains, both in studies using drug-naïve controls and studies using polydrug controls. These results are consistent with previous meta-analytic findings that **ecstasy use is associated with impaired short-term memory function. Lifetime ecstasy consumption predicted effect size in working memory but not in short-term memory. The current meta-analysis adds to the literature by showing that ecstasy use in humans is also associated with impaired working memory, and that this impairment is related to total lifetime ecstasy consumption.** These findings highlight the long-term, cumulative behavioral consequences associated with ecstasy use in humans.

MDMA and LSD.

Parrott, A. C.

Drug abuse and addiction in medical illness: Causes, consequences and treatment. Verster, Joris C., (Ed); Brady, Kathleen, (Ed); Galanter, Marc, (Ed); Conrod, Patricia, (Ed); pp. 175-188; New York, NY, US: Springer Science + Business Media; 2012. xvii, 573 pp.

Abstract:

MDMA is a methamphetamine derivative and powerful CNS stimulant, which is taken at dance clubs and parties under the street name of 'ecstasy'. MDMA or 3,4-methylenedioxymethamphetamine is an indirect monoaminergic agonist, leading to increased levels of synaptic serotonin, dopamine, and other neurotransmitters. It also stimulates the hypothalamic-pituitary-adrenal (HPA) axis, increasing the release of many neurohormones. Recreational MDMA users at dance clubs demonstrate an 800% increase in the stress hormone Cortisol. In acute terms, most ecstasy users are in a state of hyper-stimulation, and display elements of the serotonin syndrome. This is generally relieved by resting or 'chilling out', although it can develop into severe hyperthermia. Medical treatment should focus on immediate rest and cooling. Blood tests are also needed to monitor potential hyponatraemia, when excessive fluid-intake dilutes sodium levels. In the absence of rapid medical intervention, fatalities may occur. **Acute MDMA disrupts attention, impairs cognitive processing, and makes car driving hazardous.** The period following recreational ecstasy/ MDMA is typified by neurochemical recovery, when feelings of lethargy, irritability, and depression predominate. Thermal stress and prolonged dancing when on-ecstasy can heighten the emergent neuropsychobiological problems. The

dependence syndrome with MDMA has a two-factor structure, with compulsive usage and escalating doses/binge ing. Indeed chronic tolerance is almost universal amongst regular users. **Regular ecstasy users can display a range of neuropsychobiological problems, including memory deficits,** impaired problem solving, reduced social intelligence, disrupted sleep architecture, sleep apnea, oxidative stress, and reduced immunocompetence. Psychiatric symptom profiles are often raised. Interactive diathesis-stress models note that prior predisposition factors are exacerbated by repeated metabolic overstimulation. **The psychedelic drug LSD is also associated with various psychiatric problems, including psychotic breakdown, paranoia, and perceptual flashbacks. These are most prevalent in regular LSD users. Medical problems with MDMA can include cardiac, renal, and hepatic damage. Neuroimaging indices often show a reduction in serotonin transporter density, consistent with the data on serotonergic neurotoxicity in laboratory animals.** These multiple factors have been integrated into metabolic-distress model. To summarise, **MDMA is a powerful acute metabolic stressor, with a range of adverse acute effects, recovery problems, and long-term neuropsychobiological problems. The main problems with LSD are the risk of psychiatric breakdown, especially in susceptible individuals.**

Human psychobiology of MDMA or ‘ecstasy’: An overview of 25 years of empirical research.
Parrott, Andrew C.

Human Psychopharmacology: Clinical and Experimental, Vol 28(4), Jul, 2013. Special Issue: Novel psychoactive substances. pp. 289-307.

Abstract:

Aims: This paper aimed to review how scientific knowledge about the human psychobiology of MDMA has developed over time. Methods: In this paper, the empirical findings from earlier and later studies will be reviewed. Results: When MDMA was a ‘novel psychoactive substance’, it was not seen as a drug of abuse, as it displayed loss of efficacy. However, recreational users display a unique pattern of increasing doses, deteriorating cost–benefit ratios, and voluntary cessation. MDMA increases body temperature and thermal stress, with cortisol levels increased by 800% in dance clubbers. It can be extremely euphoric, although negative moods are also intensified. MDMA causes apoptosis (programmed cell death) and has been investigated for cancer therapy because of its anti-lymphoma properties. **Recreational users show deficits in retrospective memory, prospective memory, higher cognition, problem solving, and social intelligence.** Basic cognitive skills remain intact. **Neuroimaging studies show reduced serotonin transporter levels across the cerebral cortex, which are associated with neurocognitive impairments.** Deficits also occur in sleep architecture, sleep apnoea, complex vision, pain, neurohormones, and psychiatric status. Ecstasy/MDMA use during pregnancy leads to psychomotor impairments in the children. Conclusions: The damaging effects of Ecstasy/MDMA are far more widespread than was realized a few years ago, with new neuropsychobiological deficits still emerging.

Acute effects of ecstasy on memory are more extensive than chronic effects.

Shariati, Mohamad Bakhtiar Hesam, et al.

Basic and Clinical Neuroscience, Vol 5(3), 2014. pp. 225-230.

Abstract:

Introduction: Exposure to 3, 4- methylenedioxymethamphetamine (MDMA) **could lead to serotonergic system toxicity in the brain. This system is responsible for learning and memory functions. Studies show that MDMA causes memory impairment dose-dependently and acutely.** The present study was designed to evaluate the chronic and acute effects of MDMD on spatial memory and acquisition of passive avoidance. Methods: Adult male Wistar rats (200-250 g) were given single or multiple injections of MDMA (10 mg/kg, IP). Using passive avoidance and Morris Water Maze (MWM) tasks, learning and spatial memory functions were assessed. The data were analyzed by SPSS 16 software and one- way analysis of variance (ANOVA) test. Results: Our results showed that there were significant differences in latency to enter the dark compartment (STL) between sham and MDMA-treated groups. Acute group significantly showed more STL in comparison with chronic group. Furthermore, MDMA groups spent more time in dark compartment (TDS) than the sham group. Administration of single dose of MDMA significantly caused an increase in TDS compared with the chronic group. In the MWM, MDMA treatment significantly increased the traveled distance and escaped latency compared to the sham group. Like to passive avoidance task, percentage of time spent in the target quadrant in MDMA- treated animals impaired in MWM compared with sham group. Discussion: **These data suggest that MDMA treatment impairs learning and memory functions that are more extensive in acute- treated rats.**