LSD and ketamine in schizoaffective paranoid psychosis involving childhood and war trauma—a retrospective case study

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Abstract

Currently, documentation on the effects of psychedelics on psychosis appears scarce. In the present case, a higher-dose LSD experience during acute paranoid psychosis before the initiation of antipsychotics induced feelings of love, which resolved the majority of the symptoms of the paranoid psychosis in one session, leading the person to reconnect with his family and seek treatment in a psychiatric hospital. The session did not resolve schizoaffective disorder, however. More than a decade later, while using the antipsychotic aripiprazole, concurrent self-administration of ketamine induced psychedelic effects that appeared to allow for practicing 'grounding' of psychotic thoughts. Immediately afterwards, daily self-administration of psycholytic doses of LSD for four weeks caused a mood-enhancing effect that enabled the patient to successfully discontinue aripiprazole without the return of psychotic symptoms. No psychotic or other noticeable symptoms could be observed during two interviews conducted in the two months following the discontinuation of the antipsychotic.

The mechanisms of action remain unexplored, and their possible generalizability to other cases remains unclear, but the observations may serve as a basis for further research. It may, for example, be that chronic use of LSD induces a tolerance to its psychedelic effects but not to its anti-inflammatory or other possibly unknown effects, which may be related to the observed mood-enhancing effect. A preclinical study from 1971 appeared consistent with the claimed effect.

In the present case, paranoia, i.e., the hypersensitivity to potential threats, was partly due to childhood trauma, partly intentionally induced by military training, and partly accentuated by war experiences. It could not be 'turned off'. Fear related to the uncertainty of survival formed the core of psychosis; without the fear, psychosis would likely not have existed. Paranoid psychosis presented itself as a biased estimation of probabilities of possible adverse outcomes, as a mismatch between the past and the present.

Keywords: psychedelic therapy, psychedelics, LSD, ketamine, 2-FDCK, psilocybin, aripiprazole, cannabis, alcohol, psychosis, paranoia, fear, antipsychotics, schizoaffective disorder, schizophrenia

Introduction

This study features a man first diagnosed with major depressive disorder, then with schizoid personality disorder, and eventually with schizoaffective disorder of the depressive subtype. Current diagnostic systems explicitly ignore etiology, cataloging symptoms instead. In this case, symptoms consisted of depression and a paranoid fear of being harmed by others, leading to avoidance and social isolation. Etiologically, these symptoms could be explained by his life experiences in a childhood environment filled with intimidation and domestic violence, as well as a war experience in his adult life.

The validity of the diagnosis of schizoaffective disorder has been questioned. Regardless, the term schizoaffective refers to a psychotic condition. The concept of psychosis in itself remains largely undefined, but it typically refers to a condition and behavior that others consider illogical to a significant degree and possibly dangerous due to the difficulty of predicting the actions of the psychotic person.

In order to understand the phenomenon, one historical attempt to understand psychoses was to use psychedelics to simulate a psychotic condition. Friesen reviewed the history of research on psychosis and psychedelics, noting that in the 1950s and 1960s, research on psychedelics and psychosis was deeply entangled but became disentangled in the 1970s (Friesen, 2022). Psychiatric research funding shifted towards a biomedical framework, focusing on neurotransmitter hypotheses in psychosis, reflecting the reductionist approach in current psychiatry. Friesen advocated for a more integrative, holistic approach.

Haden et al. reviewed current and historical research and clinical reports on the relationship between psychedelics and schizophrenia (Haden et al., 2023). They concluded that lower doses of psychedelics, mostly LSD, appeared to have a potential beneficial impact on the negative symptoms of schizophrenia. The term negative symptoms refers to a lessening or absence of normal behaviors and functions related to motivation and interest, or verbal or emotional

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expression (Correll and Schooler, 2020). Negative symptoms included asociality, reduced experience of pleasure, and reduced goal-directed activity due to decreased motivation.

Maćkowiak discussed possible neurobiological pathways relevant to the intersection of psychedelics and schizophrenia, also commenting that the recommended doses of psychedelics in schizophrenia treatment had not been established, sub-psychedelic dosing or microdosing had been considered, and exploratory studies were needed to determine the tolerability of treatment and appropriate dosing regimen (Maćkowiak, 2023).

The present study predominantly aligns with the original discourse on psychosis and psychedelics, primarily aligning with ethnographic and object relations approaches (Tähkä, 2006). The study was based on two semi-structured online video interviews conducted in May 2024, with a total duration of two hours. A review of the manuscript was conducted afterwards.

Case description

The interviewee was a man in his late forties. His parents divorced when he was seven. After that, he lived with his father, who was 'a very difficult person'. The father often used intimidation to discipline his two sons and 'always belittled' them. The father was also physically violent; for example, he once tried to hit his other son in the head with a glass bottle.

At the age of thirteen, the father threw the interviewee into a wall. Subsequently, he moved to live with his mother. He started to act out; when challenged, he became angry and aggressive. Because of that, at the age of sixteen, he ended up hospitalized for the first time. At the psychiatric hospital, he 'wouldn't know what was happening ... wouldn't recall what was happening'. Regardless, he was neither medicated nor diagnosed with anything.

By the time he was eighteen, he had gained 'enough self-awareness to kind of hold those anger impulses in'. He enrolled in college, became 'very depressed', and was diagnosed with major depressive disorder. He felt fearful towards people who were aggressive, insulting, or belittling, i.e., people who acted like his father. Gradually, he started to become paranoid, thinking that people, including his friends, were going to hurt him. When he visited someone's house, he was afraid that they were going to try to hurt him there. He began carrying a knife with him for protection, 'to protect himself from his friends'. Around that time, he became aware of the paranoia.

When his friends were talking, he would feel that they were making fun of him and belittling him. The friends were not aggressive or violent like his father, but they would make jokes that made him feel like he 'wasn't smart enough or didn't fit in' (before the interview with an explicit question about it, he had 'never thought about the connection' between his father's actions and his friends' actions).

The process involving the onset of paranoia started with him sinking into depression. Once depressed, he began questioning everybody's motives and feelings about him. It 'built up in his mind' until he started worrying that people were out to get him and trying to hurt him. Drinking alcohol could trigger the paranoia. He had consumed 'a lot of cannabis' during his later life, after becoming paranoid and while using aripiprazole. Cannabis was thus not the initial trigger of paranoia or psychosis, but it consistently triggered it. He no longer consumed cannabis. Also, being around his father triggered 'a lot of anger and anxiety', and he had therefore 'basically cut him out' of his life.

After graduating, he 'tried grad school' but ended up dropping out because of excessive drinking. Regardless, 'along the way', at the age of 25, he got married, and they ended up moving to another state for his wife to work on her PhD. He 'did not know what to do with his life'. A few years after the 9/11 attacks, a war in Iraq was started, and there was a lot of demand for people in the military in the US. He ended up joining the army and serving in Iraq. His best friend was serving with him.

In the military, he had a role as a scout, which was similar to infantry. The role was defensive, not offensive; he was not attacking other people but protecting his own troops. When someone important needed to move from, say, Kuwait to Northern Iraq, his team would escort them, making sure that they were not attacked. Other tasks could consist of moving important equipment without it being damaged.

> *When I first got there, I was afraid all the time. I didn't trust the equipment or myself. After a couple weeks, I just decided, you know, here I'm going to die or I'm not. The fear just went away. It's like it got turned off. I don't know how. And I didn't experience that fear again for the whole time I was in Iraq until the end of my time there, about a month before I got home. I started to feel fear again on missions because my thought was that it would really suck if I made it all this time and then died at the very end. It was a weird feeling to feel that, at any moment, you could blow up.*

His specific job was 'to go in front of everybody and to make sure there was nobody up ahead that was gonna attack us ... I would drive ahead in my Humwee and make sure the way was clear; make sure that there were no bombs on the road; things like that'. Checking was mostly visual, but the vehicle contained equipment for disabling radio signals so that roadside explosives could not be detonated remotely, and they 'were safe while looking for the bomb'. Regardless, it didn't always work, and one team member 'got blown up'.

His best friend became fearful, unable to man the gun up in the turret of his truck, so he told the friend to get down and drive while he would man the gun himself. A couple of weeks after the friend returned home from Iraq, he unexpectedly killed himself. He had been out drinking with a relative, and after the relative went to bed, the friend 'just went out to the backyard and hung himself from a tree'. He informed the sergeant of his team about what had happened; the sergeant's response was that the friend was weak. He considered the response 'not very helpful' and handled the aftercare of the incident 'mostly by drinking a lot'. He also had his own problems readjusting to society.

> *After the war, I was always hyperaware of what was around me, who was around me, and what they were doing. Always kind of on edge that someone might do something violent at any moment. In this part of the country, people carry guns all the time. That triggers me too. If I see someone walking down the street with a gun, I immediately become worried that something's gonna happen and that somebody's gonna do something violent.*

He could no longer do normal things, like sit in a movie theater, because he was always afraid that someone would walk in and start shooting people. He owned several guns and slept with one for several years. Occasionally, he hid in his attic for a week at a time. Approximately a year after returning home, he started re-experiencing paranoia in a more severe form. It became more visual; for example, people's faces would seem distorted, or he would see shadows. He began thinking that people in the army were trying to attack him and wanted to kill him. He went into hiding in the mountains for two months, living in his car, to protect himself from those who he thought were trying to hurt him. By accident, he met 'a hippie' who had liquid LSD with him. He described what was happening to him to the hippie, who decided to give him acid. The acid 'made him feel like all these overwhelming feelings of love', triggering a desire to return home.

> *He had a bottle of liquid acid and asked me how much I wanted. I said, I don't know; just give me enough for it to do something. Then I went back into the mountains by myself and took the acid. It was just like this feeling of love washed over me, and I realized that whatever I was experiencing was not real. I cried a lot and let the emotions move through me. It wasn't a super-visual experience or anything. There was some visual stuff, but it was mostly emotional. It felt like my heart had opened, and I wanted to be connected to people instead of wanting to run away from them. I wanted to check in at a hospital because I wanted to find healing for what was wrong. Whatever I was experiencing, I didn't want to feel it anymore. I didn't want to feel the fear and the paranoia. I wanted to feel like a normal human being. I wanted to be at home. I didn't feel that I needed to take more LSD, and at that point, I didn't know how to get it. It was totally by accident that I found that hippie. I never saw him again, and I don't know what happened to him, but I was grateful for him. I don't know why he thought it was a good idea to give me LSD. That's a good question. He was a smart hippie, I guess.*

Afterwards, he called his brother and told him that he needed to go to a hospital; he trusted that the hospital would help. The brother flew to the mountains to pick him up, drove him home, and checked him into a hospital. Once he got in, he immediately stopped trusting the personnel who 'kept trying to get him to take antipsychotics', telling him that he would feel better if he took them. He kept refusing them, saying that he didn't want the antipsychotics but just wanted to feel better. After a week, they finally convinced him to take the antipsychotics; he started to feel better and started to trust them again.

At the time, he was 32 years old. The hospital 'didn't prescribe acid' but risperidone and venlafaxine. The latter was then switched to duloxetine and later to various other SSRIs; 'it went on and on from there', with the medical personnel prescribing him various drugs along the way, trying to help him. After two months, he was discharged from the hospital. At home, risperidone 'helped a lot': the paranoia and delusions of being chased by the government and the army disappeared. At some point, he became afraid that he might shoot someone by accident and sold all his guns (he commented that currently, he 'actually no longer believed in violence). He felt normal enough to cope with his wife giving birth to their daughter, being honorably discharged from the army, moving to another state, and going back to work. He put most of his time into raising his daughter.

It took about a year for him to 'feel fully normal again', but in the end, things were 'pretty good'. His depression was relieved by antidepressants and his delusions by risperidone. However, the medications began inducing adverse effects. He started to develop twitches and trembles in his hands and to gain a lot of weight—approximately 30 kilograms. He described that at that point, 'the choice was between psychosis or taking the antipsychotics and dealing with the side effects, so I chose the side effects'.

Around the same time, he experienced 'a spiritual awakening or a religious conversion' and returned to his childhood religion of Lutheranism (Granquist, 2016). He hadn't been to church in many years but started taking part a lot, ended up going to seminary, and became a pastor. He was ordained in 2021 and became responsible for two churches.

For a period of three years, while on aripiprazole, he consumed cannabis for relaxation, feeling it made him calmer. It was fun to listen to music and relax, but the effect did not last. Instead, cannabis started triggering paranoid thoughts. He would 'sit in his bed and worry about everything' that was happening around him and suffer from insomnia. 'Lots of negative thoughts' about himself emerged, and he began seeing himself as a failure. As the cannabis use proved counterproductive, he eventually stopped using it about a year before the interview.

For a while, I tried to recapture that kind of relaxation, the joy that it gave me to listen to music and things like that, but it just became overwhelming. I couldn't smoke weed without becoming worried about what I was doing with my life, what the state of the world was, and whether or not my family was safe. All those kinds of things. So I had to stop.

At this point, he had been on antipsychotics for about ten years. Because of the side effects, he was switched from risperidone to aripiprazole, but it made no difference with respect to either the weight gain or trembling. He asked whether he would need to stay on antipsychotics for his whole life. The psychiatrist responded that they could try weaning him off the antipsychotics and see what happens. In 2022, they started a program of gradually declining his dose. At first, he was doing well at the church, taking care of people, as well as doing well at home; 'everything seemed really happy'.

However, at the end of 2022, although he was still taking a small dose of aripiprazole, he began experiencing paranoia again, with thoughts of people being 'out to hurt him'. He thought this was due to overexerting himself at work, with 'too much taking care of people and not taking care of himself enough'. He took a month off and tried to rest. Regardless, a month after returning to work, the paranoia returned. One day, he saw a truck parked in their driveway. He thought maybe there was somebody with a gun there, broke into the truck, and searched it for guns. Finding nothing, he soon realized that he had broken into the truck of someone who posed no threat. At that point, he realized that there was something wrong with how he was thinking.

The first time I tried going off the antipsychotics, I felt the same fear that I was feeling in the war; I felt it a lot. I felt like, at any moment, someone was gonna attack me. All the time. Things would happen that would make me feel especially fearful. The part of the country that I live in is very conservative politically and religiously, so there's a lot of bigotry. I was wearing a shirt one day that said, like, science is real, love is for everyone, stuff like that in rainbow colors, kind of like a gay pride shirt. Somebody drove by me and yelled at me, 'Your shirt sucks!' That triggered me and sent me into a spiral for several weeks. I was worried that people were gonna attack my house out of hatred for people who were gay. Things like that would overwhelm me. Whereas usually I would think it was just some ignorant teenager, I didn't think that. I thought this is somebody who's gonna attack my family, and it would send me into a spiral.

He became worried that he wasn't safe any more and temporarily resigned his position at the church to seek help. It took a while to get checked into a psychiatric ward at a Veterans Administration hospital. However, it was a lock-in ward, and as soon as he locked himself in, he became 'super paranoid that they were gonna keep me forever and wouldn't let me go'. Therefore, instead of working on getting help, he spent the whole time there trying to find a way out. After a couple of weeks, he was released and returned home, and the paranoia and delusions continued to build. He was worried that people were going to try to hurt him and his family.

In the spring of 2023, his wife told him that something was wrong and he had to go to the hospital. He asked whether the Veterans Administration (VA) could offer psychiatric help without a lock-in. The VA offered him a 'domiciliary', a six-week program of 'basically living in a dorm with a bunch of other people who were going through similar things and undergoing intensive psychotherapy and group work all day long for five days a week', with weekends off. As he checked into the program, aripiprazole was reinstated. His paranoia was relieved, but he immediately started gaining weight again, as well as developing ticks, twitches, and other issues.

At the end of summer 2023, the program ended, and he returned home, spending 'a lot of time just trying to feel normal again'. He stayed at home for eight months, 'just brooding' by himself, 'wondering what to do' with his life, slowly feeling 'better and better and better'. Eventually, he started very openly talking to the bishop of his church about what had happened over the previous year. The bishop invited him to return to his work as soon as he felt better.

During the eight months at home, he had begun researching alternative treatments for schizoaffective disorder and schizophrenia. He found a lot of materials on using psychedelics for treating major depression, post-traumatic stress disorder, and other non-psychotic conditions. In contrast, on psychedelics in psychotic conditions, he could only find 'some old stuff from the sixties' and two recent case studies (Turkia, 2022, 2023).

Three or four months before the first interview, he had initiated talks about returning to work. Yet he felt he could not return to it due to the numerous side effects of antipsychotics, especially 'feeling foggy in his brain'. Because he wasn't feeling better at that point, he researched for solutions online in various places, the main one of which was Psychonaut Wiki (psychonautwiki.org). He ordered psilocybin capsules and decided to try them 'to see what they would do for him'. Due to the concurrent use of aripiprazole, 'psilocybin really didn't have much effect at all'. Therefore, the ordered DMT and tried that, observing that 'it would kind of shock me a little bit, but I wouldn't have hallucinations or anything. So that didn't work'. In his pursuit to further investigate how to induce a hallucinatory experience while on aripiprazole, he found that dissociatives worked. He tried ketamine and its analogue, 2-fluorodeschloroketamine (2-FDCK), observing that both induced a hallucinatory dissociative experience.

During one month, I used ketamine to induce a series of hallucinatory dissociative experiences, for which I kept some scattered notes of my experiences and thoughts while on the drugs. The experiences were

personally profound and gave me insight into what has happened to me and where I am now. They were also very challenging experiences, as they were not euphoric like my experience with LSD in the mountains, and at times they became even a bit worrying given how strange the experiences became. Instead of euphoria and connection with others, they broke down logic and meaning in a way that made me think of life in a different way and made me appreciate being grounded in my body and in my life with my family. With that said, I have little desire to repeat those dissociative experiences and have moved on.

In more detail, the experiences were very strange, disorienting, or 'dissociative', or whatever it is supposed to cause. It was as if logic and language would break down. My connection with my body would be broken down. I remember things like looking at my hands and wondering how to keep track of them in space, wondering how I was related to them. I was very careful not to move around a lot because balance became a real big problem. Sometimes, if I was too disoriented, it would become kind of worrying, and I would have to remind myself that this experience is going to pass in a little bit and that this is temporary.

It's hard to explain. Everything felt very hard to make sense of. It would be almost like floating in space, grasping for some kind of handhold to pull myself back down to the ground. As I was going through these experiences, it led me to wonder: What do I need to feel meaningful. What do I need to feel grounded? It appeared that such things would be feeling centered in my body or being able to experience love for my family. These kinds of things would come to mind as the things that ground me, give me the ability to find meaning, and kind of give logic to my life, I guess. I would often come back to these thoughts, usually as I was 'coming out' of the experience back to being grounded.

Ketamine wouldn't bring up memories so much, but it would trigger feelings. I would feel a lot of longing for affection and longing for connection, similar to my first LSD experience, but it wasn't as positive as the LSD experience. It was usually more about sadness than happy longing, I suppose. There was often some sadness about things that I had thought about.

I did about eight such sessions, approximately twice a week, with doses escalating from 50 to 300 milligrams, but they are so disorienting, I really wouldn't want to repeat them. The process felt like I was getting deeper and having deeper experiences, but after a while, it started to feel too disorienting, and I didn't want to do it anymore.

Afterwards, I guess it impelled me to want to connect to people in a loving and healthy way. That's what it felt like. I guess it impelled me to try to find ways to repair some broken relationships in my life. Not with my dad or my brother, but... well, I did end up reaching out to my brother occasionally to see how he's doing and things like that. But the experiences made me want to redouble my efforts to connect with my daughter.

He described that paranoia featured itself as an embodied sensation, 'a warning system going off'. Grounding was required to balance that system—to restore the ability to make predictions about the world, which was a necessary condition for obtaining a sense of safety. Ketamine appeared to destabilize previously learned beliefs, neural pathways, or automated behavioral patterns that no longer matched the current living environment, allowing for a 'recalibration' of beliefs about safety.

When I start to feel the paranoia, I feel it in my gut, like feeling sick to my stomach. Sometimes I feel it in my torso, especially around my kidneys, almost as if I got beat up, like somebody hit me in the side. I start to feel sore. I don't know where that comes from—if I'm stressed out and squeezing my muscles or what. Those are the two main ways: feeling sick to my stomach and feeling a kind of soreness in my body, especially in my torso.

The purpose of the grounding, I think, was a need for a coherent meaning and story in my life. The ketamine would totally break down everything that would seem logical or meaningful. Words would lose meaning. I would sit there sometimes and just wonder. I would say a specific word to myself and wonder, Is that even a word? What does that even mean? And I would be lost, totally disconnected from how the English language worked, from the logic of human language, and essentially unable to express myself.

The only thing that seemed to have any meaningful content were my emotions. And so, being grounded restored my ability to see how the different parts of what I was seeing and feeling—no, sensing—how they all related to me. Sometimes in straightforward ways, like, This is my hand, and I can move it. Sometimes in more abstract ways, like, This is my house, and I feel safe in it.

The grounding would restore those relationships between me and the world in such a way that I could make sense of them. I felt oriented again. As I came out of that experience, I started to realize that things are as I think they are; it wasn't a world I was totally unfamiliar with. It was a world that I knew how to get around in, that I could have some expectations about, and that I could trust.

I think it shows me that I can trust my body, or that I want to trust my body and the feelings it gives me—the emotions I have—that they are an important part of the way I get around the world. But when I

get paranoid, I feel it in my body. It's like a warning system is going off. Having the warning system go off all the time is almost like another way of being disoriented. It made me think I needed to find a way to balance that warning system. Ketamine did not balance that system, but it showed me a need for it. I feel like the LSD helps much more with the balance. It feels like that. I'm not sure.

He was afraid of discontinuing aripiprazole because he didn't want the schizoaffective symptoms to come back. As a next step, he obtained LSD and had it tested with reagents to ensure its authenticity. Next, he took an assumed dose of 280 µg of LSD, which 'made him feel better' but he 'didn't have any psychedelic experience at all', although the same substance produced an LSD experience for another person.

He decided to do 'an experiment to see what would happen if he took LSD for a month', consuming 70 µg of LSD daily for a month. His wife commented that he 'seemed a lot better'; he himself also felt that he was 'starting to feel a lot better'. At the end of the month, he began taking a dose of 70 µg of LSD every four days for a few weeks, after which he stopped the experiment to see whether the mood-enhancing effect was lasting.

The effect lasted 'for a while', to the point where he was 'feeling good enough to call the bishop' and ask for his job back. Regardless, he was 'still trembling' and overweight. He asked his doctor whether they could experiment with discontinuing the antipsychotics again, and the doctor agreed. This time, however, he decided to use the regimen of daily administration of 70 µg of LSD. In contrast to the previous time, despite the continuous reduction in the dose of aripiprazole, the psychotic symptoms did not return, and he successfully discontinued aripiprazole completely in three weeks.

From what I read, the tolerance builds up pretty quickly. I was not using big doses, so I was wondering if maybe building up that tolerance was doing something similar to aripiprazole, that is, activating but not overactivating my brain, but I'm not sure and don't know how to figure that out.

I don't know whether LSD had a grounding effect. I would say the effect was more balancing and uplifting. Not significantly: I was not having 'body highs' or something like that. The effect was quite subtle, but it would make me feel capable of coping with the world and have a more positive or hopeful outlook, consistently, every day. It was pretty consistent. When I transitioned to not taking it every day, if I started to get down, my wife would say, Have you taken your acid? She can see the difference.

Ketamine was interesting intellectually and caused me to try to reconstitute my world after it broke down. With ketamine, oftentimes the emotions it would dredge up had to be processed afterwards. In contrast, LSD simply gave me a balance where I could just go on living my life. So, LSD seems to be the most important. It gives me the balance that I want. In retrospect, I don't think skipping the ketamine part would be a significant loss. It doesn't feel like it was a necessary part of what I was doing. The reorganization might have been important; it certainly triggered me to think about how I was living my life and how I was relating to people. But I'm not sure that I needed those experiences to find that.

At the time of the first interview, he had not taken aripiprazole for three weeks. Instead, he took 70 µg of LSD once every four days. He experienced neither psychotic symptoms nor psychedelic effects, was back at work, and felt good. He was wondering about the possible long-term effects of aripiprazole and was 'maintaining, monitoring, and making sure that nothing happened again'. Concerning challenges to that, between the first and second interviews he had a family crisis involving his daughter.

This has been very hard. Yet this time, even though it's a stressful time, it hasn't triggered any psychosis or anything like that. I do get a bit overhelmed and depressed at how hard things are, but I just keep going, I guess.

Concerning the boundary between 'psychosis' and 'normalcy', he was unsure about the difference between psychotic fears and fears that were 'realistic'. Other people around him 'seemed to be able to cope with it better' than he did. He considered that the fear of someone walking down the street with a gun possibly being violent was legitimate, but other people didn't worry about it and didn't have the same fear. In his view, his fear was based on his experience with other people with guns in the war. The fear had not been present before the war.

He was not afraid of Iraqi people or Arabs; he 'actually had a soft spot for them in my heart'; he 'loved those people'. The fear was about people who seemed suspicious or carried a gun; he 'couldn't be around people like that ... which, you would think, being a pastor, isn't that big of a deal, but people do carry guns to church here. It doesn't make any sense to me, but they do it'.

I know that I was trained to be hyperaware of what was around me in order to see if there were bombs or people with guns up ahead as I was moving through Iraq. When I got home and was hyperaware, I knew why. I had been trained to do that, and I couldn't turn it off.

So, in a way, one might say that you were trained to be psychotic?

That's how it felt. That's a good way to put it. Right now, I'm kind of in a period where I'm learning how to turn off the fear.

In his view, the connection between fear and psychosis was such that when the fear built up into a belief that there was actually some kind of plot to hurt him, it became delusional; fear turned into a psychosis, or the fear together with the belief formed a psychosis. It was about 'creating a story' in his head about what was happening.

Concerning diagnostics, his diagnosis had changed over the years. Initially, he was diagnosed with major depressive disorder. After the war, during hospitalization, he was diagnosed with schizoid personality disorder (Winarick, 2020). Since then, he had attended therapy, regularly visiting a psychologist and a psychiatrist. The psychiatrist later changed his diagnosis to schizoaffective disorder (ICD-10 F25). He did not know why the diagnosis was changed and felt that the doctors 'were just labeling things kind of willy-nilly [unplanned or haphazard] along the way'.

Concerning possible connections between the culture or typical mindsets in the United States and his personal paranoia, he commented that the culture indeed contained a lot of paranoid features, for example, people feeling the need to carry guns. He considered that the culture 'may have created the paranoia, and in any case, it definitely exacerbated it'. He was often avoiding the news because what was going on in the country scared him so much: people feared and mistreated each other. It was hard for him to 'live his life without walking around feeling full of fear'. Approximately nine months before, when he had been to a hospital, one of the things he had worried about was getting his family out of the United States and moving to another country, such as Canada, 'where they didn't have the same problems'. He had been 'so scared of what was gonna happen in this country and how people were going to mistreat each other that I felt like I couldn't live here anymore'.

Discussion

In contrast to classical psychedelics, concurrent administration of aripiprazole and the dissociative ketamine induced psychedelic effects that were perceived as somewhat challenging acutely but likely therapeutic afterwards. Regardless, it appeared that the possibly previously undocumented daily use of psycholytic doses of LSD in combination with gradually declining doses of the antipsychotic aripiprazole allowed for the resolution of paranoid symptoms previously diagnosed as a symptom of schizoaffective disorder (ICD-10 F25).

An in-depth study of psychosis may be complicated by the fact that, in order to fully understand the phenomenon, one would need to experience it. Yet, psychosis involves difficulties in reality testing, making objectivity hard to obtain. Obvious solutions might include being intermittently psychotic or studying psychosis after being healed from it, but both approaches may involve their own difficulties. Also, psychotic states appear to be very heterogeneous and related to personal history; thus, understanding one type of psychotic state may reveal little about different types of psychotic states.

Past approaches included simulating psychosis with psychedelics. However, experiences induced by classical psychedelics may lack the aspect of full subjective believability of the induced sensations, so that the actual 'psychotic' component is missing. A better simulation might be achieved with, for example, *Salvia divinorum*, but the very presence of believability may make that approach somewhat dangerous. It is therefore infrequently attempted, with Arthur and Siebert perhaps serving as rare examples (Arthur, 2010; Siebert, 2015).

In the Jungian tradition, psychosis is often considered a metaphorical, dissociated representation of previous emotional trauma (Hill, 2021). In the present case, there appeared to be little need for metaphorical interpretation, as the relationship between childhood trauma or adverse childhood experiences (ACEs), war trauma, and the cognitive psychotic contents appeared rather direct and obvious. With regard to depression, the description seemed to support the idea of unexpressed anger as a cause of depression. Also, the case illustrated the merely suppressive effect of antipsychotics concerning symptoms of unresolved trauma.

Bentall and Sitko discussed the specific role of insecure attachment in paranoid delusions (Bentall and Sitko, 2020). They pointed to paranoia as a continuum, noting that it was difficult to draw an unambiguous dividing line between clinical paranoia in psychiatric patients and non-clinical paranoia in the general population. Psychologically, paranoia could be modeled as an over-anticipation of social threats. From the point of view of attachment theory, damaged early attachment relationships could promote insecure attachment styles, which could, in turn, lead to the kind of beliefs about oneself and others that fuel paranoid thinking. In addition, cognitive impairment, including problems with the cognitive skills required to understand the intentions of others and difficulties in reasoning about sequential information, also contributed to paranoid thinking.

Coltheart suggested that any model of delusional beliefs needs to include two components: an emotional component that explained the content of delusions and a cognitive component that explained why individuals could not persuade themselves out of their delusional beliefs (Bentall and Sitko, 2020; Coltheart, 2007). Bentall and Sitko noted that there was evidence that these two components were largely independent, and attachment seemed to provide the key to the emotional component (Bentall and Sitko, 2020). They pointed out that there was a need to pursue a developmental approach to psychosis that included both emotional and neurocognitive elements, and that doing so required the use of longitudinal designs encompassing a considerable portion of the human life span.

Desmet presented a theory of psychosis based on the presence of free-floating anxiety, frustration, and aggression (Desmet, 2022). Into this mindset, a narrative could be introduced that would provide an external object for the

anxiety, a strategy for controlling this object, and another object to serve as a target for the frustration and aggression. By providing an object, the free-floating anxiety was fixed into an object that could be controlled, and the anxiety could be reduced or eliminated. Typically, the narrative would involve anxiety about survival. The narrative could be presented to the individual from the outside.

In psychoses involving one individual only, the individual could perhaps construct the narrative internally, by himself, from past experiences. In the incident involving breaking into the truck on a driveway to check it for weapons, the external object was the truck, and raiding it was a strategy to control the object. An object serving as a target for frustration and aggression was missing; the role could have been assigned to someone trying to stop him from raiding the truck. Intensive fear possibly induced a trance-like state in which mental focus narrowed to such an extent that anything conflicting with the strategy was either ignored or perceived as a threat and could not be tolerated. Thus, the possibility of the truck not posing a threat was either not considered at all or dismissed as unlikely.

Cherniak et al. discussed attachment theory in the context of a psychedelic science of spirituality (Cherniak et al., 2022). Interactions with caregivers were considered to create internal working models that determined later interpersonal and religious/spiritual relationships. Individual differences in attachment security predicted the phenomenology and integration of psychedelic experiences. Psychedelic interventions could modify these insecure attachment models. The current case aligned with these observations.

Werner and Coveñas discussed the role of classical neurotransmitters and neuropeptides in schizoaffective disorder, focusing on prophylactic medication (Werner and Covenas, 2016). They noted that aripiprazole was a partial agonist of the D_2 receptor, had a 5-HT_{2A} antagonistic effect, and a 5-HT_{1A} agonistic effect. Risperidone had a D_2 and 5-HT_{2A} antagonistic effect. Assumedly, the 5-HT_{2A} antagonistic effects would cancel the psychedelic, assumedly largely 5-HT_{2A} agonism-related effects of classical psychedelics. Reissig et al. suggested that the 5-HT_{1A} receptor had a significant modulatory role in the stimulus effects of LSD (Reissig et al., 2005). LSD also had a high affinity for other serotonergic receptors (Mastinu et al., 2023). The mood-enhancing or antidepressant effect observed during the concurrent administration of aripiprazole and LSD might be explained by 5-HT_{1A} related interactions.

Very limited information on possible interactions between aripiprazole and ketamine was found (Nawwar et al., 2022). du Jardin et al. noted that imaging and behavioral data predominantly supported a role for 5-HT_{1A} or 5-HT_{1B} receptors in the antidepressant-like effects of ketamine (du Jardin et al., 2016). Concerning other antipsychotics, Veraart et al. noted that the only study investigating patients with schizophrenia on and off a high dose of haloperidol did not find blunting effects on ketamine-induced psychosis, and the results suggested that the mechanism by which ketamine caused psychotic symptoms was not affected by D_2 blockade (Veraart et al., 2021). The data on the interactions of ketamine and risperidone appeared inconclusive. Maćkowiak noted that hypofunction of the NMDA receptor was suggested in schizophrenia (Maćkowiak, 2023) (ketamine is a NMDA receptor antagonist (Zorumski et al., 2016)).

With regard to other pathways, Durieux found out that ketamine profoundly inhibited muscarinic signaling (Durieux, 1995). He noted that the effect might explain some of the anticholinergic clinical effects of ketamine, both central (effects on memory and consciousness) and peripheral (prominent sympathetic tone, bronchodilation, mydriasis). A review by Foster et al. noted that muscarinic receptor subtypes could modulate the specific brain circuits and physiology that were disrupted in schizophrenia and were thought to underlie positive, negative, and cognitive symptoms; novel therapeutic strategies for targeting these receptors were being investigated (Foster et al., 2021). Goodnick et al. noted that among common antipsychotics, aripiprazole displayed the lowest affinity for muscarinic M1 receptors (Goodnick and Jerry, 2002). Dean et al. noted that drugs targeting muscarinic receptors approach clinical use for the treatment of schizophrenia (Dean et al., 2023); ketamine and LSD might provide more affordable alternatives to these, perhaps with lower toxicity.

An interesting aspect of the interviewee's experiments was the daily administration of LSD combined with his experience of an enduring, mood-enhancing effect. Unlike other psychedelics, including LSD, it is known that DMT is a rare example of not normally inducing tolerance (Strassman et al., 1996), although some tolerance may be induced by extended administration (Luan et al., 2023). However, in this case, the question was not about the psychedelic effects of LSD but about a slight mood-enhancing effect. The existing research on the buildup of psychological tolerance may have focused on hallucinatory effects and might not have looked for or noticed such a mild effect. Based on the current data, it cannot be ascertained whether such a phenomenon could be due to concurrent administration of aripiprazole, some kind of neurobiological abnormality or faster elimination of the substance, the placebo effect, or the anti-inflammatory effect of LSD. In theory, tolerance might also build asymmetrically with respect to different organs or receptors (see, e.g., Ben et al. (2004)). Interestingly, a preclinical study from 1971 observed a persistent increase in brain serotonin turnover after one-month daily administration of LSD in rats (Díaz and Huttunen, 1971); this appeared consistent with the claimed mood-enhancing effect. Regardless, psycholytic administration once every four days would likely consistently produce the expected psycholytic effect. Similarly, the outcome of the initial higher-dose experience with the 'hippie' aligned with expectations.

With regard to earlier research on conditions involving early trauma-induced psychotic conditions, in the late 1960s, psychologist Gary Fisher and his team successfully administered LSD to children between the ages of 9 and 12

diagnosed with chronic schizophrenia-like psychotic disorders (Fisher, 1970, 1997, 2005; Purdue University, 2024); some details of the outcomes, which could occasionally be considered 'miraculous', have been described in a previous article (Turkia, 2022). It appeared that nonresponders may have suffered from neurological or autism-related issues, while responders suffered from deep early interpersonal trauma, such as sexual abuse, domestic violence, or neglect. Various other experimental psychedelic treatment programs for severely disturbed children also existed (Rhead, 1977).

The interviewee's early trauma was caused by an upbringing whose central feature was intimidation. Interestingly, in Chomsky's interpretation, the intention of the war in Iraq was largely to intimidate (Chomsky et al., 2022); subsequently, the behavior of the US military was experienced as deeply insulting, for example concerning the methods used during the imprisonment of the enemy, most visibly in the case of Abu Ghraib prison. According to Rubin, the US had a policy of not negotiating; instead, they 'wanted revenge' (Rubin, 2021). According to Chomsky, the intimidation and humiliation formed an emotional basis for an insurgency against the US. According to Ricks, through numerous mistakes, the US military largely created the insurgency by themselves (Ricks, 2006). Public support for the war was acquired through the use of 'propaganda and media distortion' and 'psychological warfare' (Miller, 2004).

The underlying cause of both the interviewee's childhood trauma and war trauma could thus be said to originate in a culture whose core values included a preference for intimidation, coercion, and violence. In addition to traumatizing the interviewee, the culture further traumatized the Middle East and, subsequently, a large part of the rest of the world. This kind of violent reactivity was not unavoidable or even necessary; it could be said to be a product of immaturity and shortsightedness. The same mindset could be said to have created and maintained the prohibition of psychedelic therapies.

With respect to a productive change in one's mindset, i.e., giving up the preference for violence, the interviewee provides a good example. Concerning his current profession, a relevant and notable pursuit in this context has been the Ligare network (ligare.org): 'an open network of people who desire legal and safe access and believe that Christianity and other existing religious traditions offer paths for preparing, experiencing, and integrating mystical experiences, including those occasioned by sacred plants and compounds'. The network was founded by Reverend Hunt Priest, one of the participants in a 2016 psilocybin study involving religious professionals (Devlin, 2017).

It was pointed out above that typically, psychedelic experience lacks the subjective believability of the visions or experiences of the psychedelic state; the subject is almost always aware that the experiences are 'not real'. The interviewee described that 'it was just like this feeling of love washed over me, and I realized that whatever I was experiencing was not real'. It might thus be that psychedelics could, in fact, introduce in the person the knowledge of the psychotic experience not 'being real'; this might represent an interesting mechanism of therapeutic action of psychedelics in psychosis.

In a previous case study about ayahuasca in bipolar psychosis, the same pattern of a feeling of love or support and a spontaneous rearrangement of counterproductive beliefs was observed (Turkia, 2023). Thus, while classical psychedelics might not function optimally for healthy people for simulating psychosis, they might function better for psychotic people for dissolving their psychosis by showing that the psychotic experience consists of excessive fear combined with models that do not fully accurately describe the current living environment; for example, they may be outdated or misinterpreted. In the case concerning ayahuasca, the situation was more straightforward, as the misleading belief was that childhood sexual abuse somehow was the fault of the abused child herself. In other cases, such as the present case, complications may emerge from the fact that sometimes they are exaggerated versions of the truth.

Conclusions

A high dose of LSD swiftly eliminated excessive asociality, a negative symptom of schizoaffective disorder, in acute psychosis and in the absence of antipsychotics, through reduction of fear and induction of feelings of love and social interconnectedness. Ketamine reorganized fixed, counterproductive patterns of thought in chronic psychosis and in the presence of antipsychotics. Psycholytic doses of LSD produced an antidepressive or mood-enhancing effect in chronic psychosis. The two substances thus appeared therapeutically useful as antipsychotics in various phases of disease and treatment.

It appeared that the core of paranoid psychosis involved an inability to reliably estimate the probabilities of adverse survival-related outcomes. No reliable cognitive method for differentiating 'unrealistic' fears from 'realistic' fears could be derived; the cognitive observation of safety was derived from instinctive, embodied sensations. Healing from such psychosis, i.e., a state of chronic fear, would thus require learning to tolerate the unavoidable uncertainty or eliminating the fear of death in the first place. Psychedelics have often been observed to facilitate the attainment of these goals.

Abbreviations: The following abbreviations were used in this manuscript:

2-FDCK	2-fluorodeschloroketamine
5-HT_{1A}/5-HT_{2A} receptors	subtypes of serotonin (5-HT) receptors
ACE	adverse childhood experience
DMT	N,N-dimethyltryptamine
LSD	lysergic acid diethylamide

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