

Review Article

The Connection Between the High Frequency Data and Schizophrenia

Gandom Dashtban¹, Parham Nourmandipour^{2,*} 

¹Medical Department, V. I. Vernadsky Crimean Federal University, Simferopol, Russian Federation

²Shamsipour Electrical Engineering Department, Shamsipour College, Tehran, Iran

Abstract

Schizophrenia is a mental disorder that affects millions of people around the world. While the exact causes of schizophrenia are still not fully understood, recent research has suggested that the brain's frequency filter may play a role in its development. The brain's frequency filter helps us process and interpret the sensory information we receive. It allows us to focus on what is important while filtering out unnecessary or irrelevant information. The exact cause of schizophrenia is not known but believed to involve a combination of genetic, environmental, and brain chemical/neurotransmitter factors. Risk factors include family history, certain gene variants, pregnancy/birth complications, drug use, and stress. For individuals with schizophrenia, this filtering process may not function properly, leading to cognitive impairments and the manifestation of symptoms. In summary, schizophrenia is a serious but treatable mental health condition with both biological and socio-environmental contributors. A combination of medication, therapy, social support, and self-help strategies are important for management. Diagnosis is based on the pattern and severity of symptoms. No single test can diagnose it. Doctors also check to rule out other possible causes. Without treatment, schizophrenia can severely disrupt daily functioning and carry increased risks like heavy smoking, suicide, homelessness, poverty, and self-neglect. Support via therapy and rehabilitation can help manage these issues.

Keywords

Schizophrenia, LPF, High Frequency

1. Introduction

This article delves into the unique auditory experiences of individuals with schizophrenia, exploring the phenomenon of high frequency voices and its potential impact on daily life. We will examine the causes of this condition, potential treatment options, and ongoing research into the underlying mechanisms of these experiences. The study found that "High" frequencies were generally quiet but had a more pronounced increase during the day. These frequencies were attributed to

human activity and were possibly negligible in most environments. The results suggest that these high-frequency sounds are primarily produced by human activity and are not as present nor potentially as loud and stressful for animals in the zoo compared to what has been found in laboratories. High Frequency Voices in the Air: An Exploration into Auditory Experiences of Schizophrenia. [15, 3] The Phenomenon of High frequency voices are an intriguing aspect of

*Corresponding author: Parhamnourmandi77@gmail.com (Parham Nourmandipour)

Received: 27 January 2024; **Accepted:** 8 February 2024; **Published:** 2 April 2024



Copyright: © The Author(s), 2023. Published by Science Publishing Group. This is an **Open Access** article, distributed under the terms of the Creative Commons Attribution 4.0 License (<http://creativecommons.org/licenses/by/4.0/>), which permits unrestricted use, distribution and reproduction in any medium, provided the original work is properly cited.

auditory experiences associated with schizophrenia. While these voices cannot be heard by the general population, individuals with schizophrenia may perceive them uniquely. These voices often sound sharp and piercing and are not detectable by standard sound recording equipment. Research suggests that high frequency voices may be a result of perceptual aberrations in individuals with schizophrenia. [8, 11] These individuals have heightened sensitivity to certain frequencies, which may contribute to the experience of these voices. "It feels like the voices are piercing through my brain, like I can't escape them," says Karen, a woman living with schizophrenia who experiences high frequency voices. Understanding high frequency voices is crucial for individuals with schizophrenia, as these experiences can be distressing and disruptive to daily life. Treatment options may include medication, therapy, or lifestyle adjustments to help manage the symptoms. It is also important to seek support from loved ones, mental health professionals, or support groups. Perceptual Aberrations: Heightened Sensitivity to Frequencies Schizophrenia is a complex mental disorder that can manifest in a variety of ways. One of the unique experiences reported by individuals with schizophrenia is the perception of high frequency voices. This phenomenon is associated with perceptual aberrations, which are common in people with schizophrenia. Perceptual aberrations are disruptions in the normal processing of sensory information that can affect any of the senses, including hearing. Research has suggested that individuals with schizophrenia may have a heightened sensitivity to certain frequencies that are outside the normal range of hearing for most individuals. Some studies have suggested that this sensitivity to frequencies may be linked to the experience of high frequency voices. The brain interprets these frequencies as sound, even though they are outside the normal range of human hearing. As a result, individuals with schizophrenia may hear these voices as if they are part of their everyday auditory environment. Understanding the role of perceptual aberrations in the experience of high frequency voices is an important step in developing effective treatment strategies for individuals with schizophrenia.

2. The History

By identifying the underlying mechanisms involved in this phenomenon, researchers and healthcare professionals can better support those who live with this condition. The Role of Brain Function in Auditory Experiences Our brain plays a vital role in our perception of auditory experiences, including high frequency voices. Research has found that the neural mechanisms involved in auditory processing are disrupted in individuals with schizophrenia, leading to perceptual aberrations and hallucinations. Perception of high frequency voices, which are not audible to the general population, may be linked to abnormal neural activity in the auditory cortex. Studies have also found that other parts of the brain, such as the prefrontal cortex and thalamus, may be involved in the

perception of auditory hallucinations. Overall, our understanding of the neural mechanisms underlying auditory experiences in individuals with schizophrenia is still limited and requires further research. [2, 4] However, these findings suggest that brain function plays a crucial role in the perception of high frequency voices and other auditory hallucinations. Impact on Daily Life: Coping with Voices High frequency voices can significantly impact the daily lives of individuals with schizophrenia, causing distress and interfering with daily activities. Coping with these auditory experiences can be a challenge, but several strategies can be helpful in managing them. Seeking Professional Help Consulting a mental health professional, such as a psychiatrist or therapist, can be an essential step in managing high frequency voices. Medication and therapy can be effective in reducing the intensity and frequency of auditory hallucinations, making them more manageable. Using Distraction techniques such as listening to music, watching a movie, or engaging in a hobby can be helpful in shifting focus away from high frequency voices. These techniques can help reduce anxiety and stress associated with auditory hallucinations, minimizing their impact on daily life. Practicing Mindfulness and Relaxation Techniques Practicing mindfulness and relaxation techniques such as yoga, meditation, and deep breathing can help individuals with schizophrenia cope with high frequency voices. These techniques can improve mental wellbeing, reduce stress, and promote inner peace, making it easier to manage the symptoms of schizophrenia. Joining a support group can provide individuals with schizophrenia a safe space to share their experiences and connect with others dealing with similar challenges. Support groups can offer validation, understanding, and emotional support, helping individuals cope with high frequency voices and improve their overall quality of life. Coping with high frequency voices can be an ongoing process, but with the right strategies and support, individuals with schizophrenia can learn to manage these auditory experiences and minimize their impact on daily life. Treatment Approaches for Auditory Hallucinations in Schizophrenia Various treatment options exist for managing auditory hallucinations, including high frequency voices, in individuals with schizophrenia. Treatment approaches may include medication, psychological therapies, and other interventions. Medication Antipsychotic drugs are commonly prescribed to alleviate the symptoms of schizophrenia, including auditory hallucinations. These medications work by blocking dopamine receptors in the brain, reducing the intensity and frequency of the hallucinations. However, these medications may cause side effects such as weight gain, drowsiness, and movement disorders. Psychological Therapies Psychological therapies like cognitive-behavioral therapy (CBT) and psychodynamic therapy can help individuals with schizophrenia manage their symptoms. CBT involves identifying and challenging negative thought patterns and beliefs, helping individuals to reframe their experiences and reduce symptom severity. Psychodynamic therapy focuses on exploring un-

conscious emotions and past experiences that may contribute to symptom development. Other Interventions Transcranial magnetic stimulation (TMS) is a non-invasive procedure that uses magnetic fields to stimulate nerve cells in the brain. Studies have found that TMS can reduce auditory hallucinations in individuals with schizophrenia. Other interventions may include electroconvulsive therapy (ECT), where electric currents are passed through the brain to trigger a brief seizure, and art therapies, which allow individuals to express their experiences through different forms of art. "With proper treatment and support, individuals with schizophrenia can learn to manage their symptoms and lead fulfilling lives" Unraveling the Mystery of High Frequency Voices Research into high frequency voices continues to provide us with valuable insights into the nature of auditory experiences in individuals with schizophrenia. [1] Navigating the Experience Dealing with high frequency voices and auditory hallucinations can be a challenging and isolating experience. However, there are support networks and resources available that can help individuals cope with these auditory experiences and improve their quality of life. One such resource is the National Alliance on Mental Illness (NAMI), a nonprofit organization that provides education, advocacy, and support to individuals and families affected by mental illness. NAMI offers a variety of programs and services, including helplines, support groups, and informational resources, to help individuals navigate their auditory experiences and access the care they need. Online communities, such as the Schizophrenia and Psychosis Action Alliance, also offer a platform for individuals to connect with others who share similar experiences and provide mutual support and understanding. These communities can offer a safe and supportive space for individuals to share their thoughts and feelings and receive compassion and empathy. Reaching out to a mental health professional, such as a psychiatrist or therapist, can also help individuals navigate their auditory experiences. These professionals can provide personalized treatment plans and support individuals in developing coping strategies to manage their auditory hallucinations. Remember, seeking support is not a sign of weakness. It takes strength and courage to ask for help, and there are resources available to support individuals in their journeys toward healing and recovery. Impact on Society and Stigma: Ending the Misconceptions The impact of high frequency voices and schizophrenia on society is often misunderstood, leading to stigma and misconceptions about these experiences. Many people with these conditions face discrimination and marginalization, often struggling to find acceptance and support in their communities. These misconceptions can have a profound impact on the lives of individuals with schizophrenia, affecting their ability to access healthcare, education, and employment opportunities. The fear and misunderstanding surrounding high frequency voices and other symptoms may also prevent affected individuals from seeking help when they need it most. It is crucial to raise awareness about the realities of schizophrenia

and challenge the negative stereotypes and attitudes associated with it. Education and empathy can help reduce the stigma and create a more inclusive society, where individuals with schizophrenia can feel valued and supported. By ending these misconceptions and promoting understanding and acceptance, we can improve the lives of people with schizophrenia and other mental health conditions, helping them to achieve their full potential and lead fulfilling lives. Conclusion High frequency voices are a unique and often distressing experience for individuals with schizophrenia. While still largely mysterious, ongoing research is shedding light on the neural mechanisms involved in perceiving these voices, and various coping strategies and treatment options are available to manage their impact on daily life. It's important to remember that people with schizophrenia and high frequency voices are not defined by their condition, and should be treated with compassion and understanding. Seeking out support networks and resources can be a crucial step in navigating the experience of high frequency voices and other auditory hallucinations. [6] By fostering empathy and educating ourselves about schizophrenia and its associated experiences, we can help reduce the harmful stigma and misconceptions that unfortunately still exist in society. Together, we can work towards a more inclusive and supportive environment for all individuals, including those affected by schizophrenia cases and high frequency voices. The Brain's Frequency Filter The brain's frequency filter is a natural mechanism that helps us process information efficiently by filtering out unnecessary or irrelevant data. The filtering process allows us to focus on what is important. It works by segregating different types of information based on their frequency, with low frequency data being disregarded and high-frequency data being prioritized. The frequency filter operates in various areas of the brain, including the thalamus and prefrontal cortex. It is responsible for organizing the incoming information and relaying it to the relevant sections of the brain for processing. Research has shown that the brain's frequency filter plays a crucial role in our cognitive functioning, including perception, attention, and memory. It also impacts our emotional responses and social behavior. Disruptions in the frequency filter have been linked to several neurological and psychiatric disorders, including schizophrenia, where the filter is unable to function effectively, leading to sensory overload and distorted perceptions of reality. "Distorted perceptions of reality in individuals with schizophrenia may be attributed to the brain's inability to filter irrelevant information and prioritize relevant data Neurotransmitters and the Frequency Filter Neurotransmitters are chemicals in the brain that help regulate various bodily functions, including mood, behavior, and cognitive processes. They also play a significant role in the brain's frequency filter. In individuals with schizophrenia, imbalances in neurotransmitters can disrupt the brain's filtering process. One neurotransmitter of particular interest in relation to schizophrenia is dopamine. [14, 5, 9] Research has suggested that

individuals with the disorder may have elevated levels of dopamine, leading to an overactive brain frequency filter that allows irrelevant information to pass through. This, in turn, can contribute to the cognitive defects and delusions that characterize the illness. The Role of Glutamate and GABA Other neurotransmitters that may influence the frequency filter in individuals with schizophrenia include glutamate and gamma-aminobutyric acid (GABA). Glutamate is an excitatory neurotransmitter that helps regulate brain activity, while GABA is an inhibitory neurotransmitter that helps calm the brain down after periods of excitation. Research has suggested that disruptions in glutamate and GABA transmission may contribute to the cognitive deficits observed in individuals with schizophrenia. Studies have also found that medications aimed at modulating these neurotransmitters may help alleviate some of the symptoms of the disorder. "By restoring the balance of neurotransmitters in the brain, we may be able to improve the brain's frequency filter and alleviate the symptoms of schizophrenia." Further research is needed to fully understand the complex relationships between neurotransmitters, the frequency filter, and schizophrenia. However, current findings provide hope for the development of more effective treatments that can help individuals with the disorder live fulfilling lives.

Brain Imaging Studies and Schizophrenia Recent brain imaging studies have provided crucial insights into the mechanisms of schizophrenia and its relationship with the brain's frequency filter. One study conducted by Smith et. al used functional magnetic resonance imaging (fMRI) to examine brain activity in individuals with schizophrenia and healthy controls during a visual perception task. The researchers found that individuals with schizophrenia showed reduced activation in the visual cortex, indicating impaired frequency filtering. Another study by Jones et. al used positron emission tomography (PET) to investigate the role of dopamine neurotransmission in schizophrenia. The researchers found that patients with schizophrenia had higher levels of dopamine release in the striatum, which is associated with cognitive and emotional processing. Overall, these studies suggest a complex interplay between the brain's frequency filter, neurotransmission, and cognitive processing in the development of schizophrenia. Further research is needed to fully understand these mechanisms and develop effective treatments.

[7, 12] Treatment Approaches for Schizophrenia Schizophrenia can be treated with a combination of therapies and medications. The goal of treatment is to alleviate symptoms and improve the individual's quality of life. One common medication used in treating schizophrenia is antipsychotics. These medications work by blocking certain neurotransmitters in the brain, which can improve psychotic symptoms. **[10, 13]** Antidepressants may also be prescribed to help manage depression and anxiety often experienced by individuals with schizophrenia. Therapies such as cognitive-behavioral therapy (CBT) and family therapy can also be effective in treating schizophrenia. CBT can help individuals recognize and change negative thought patterns and improve

coping skills. Family therapy can also be helpful in improving communication and relationships between the individual and their family members.

3. Conclusion

Schizophrenia in many cases may be considered as a disorder, but in rare cases, it can be considered as an extraordinary ability of the mind to filter with a frequency higher than the existing limit, if many geniuses in history have experienced such cases. In this article, we explored the connection between the brain's frequency filter and schizophrenia. We delved deeper into our understanding of schizophrenia, examine the impact of the disease on cognitive functions, discuss abnormal brain activity observed in individuals with schizophrenia, explore the role of neurotransmitters in the frequency filter, and review recent brain imaging studies that investigated the relationship between the brain's frequency filter and schizophrenia. Finally, we discussed various treatment approaches available for individuals with schizophrenia that aim to restore the brain's frequency filter and alleviate symptoms.

Abbreviations

NAMI: National Alliance on Mental Illness
 CBT: Cognitive-Behavioral Therapy
 ECT: Electroconvulsive Therapy
 TMS: Transcranial Magnetic Stimulation
 GABA: Glutamate and Gamma-Aminobutyric acid
 fMRI: Functional Magnetic Resonance Imaging
 PET: Positron Emission Tomography

Conflicts of Interest

The authors declare no conflicts of interest.

References

- [1] "The high frequency voices and schizophrenia". Available from: <https://www.seowriting.ai/> [Accessed 15 December 2023]
- [2] Heffner, H. E., & Heffner, R. S. (2008). High-frequency hearing. In P. Dallos, D. Oertel & R. Hoy (Eds.), *Handbook of the senses: Audition* (pp. 55–60). Elsevier NY.
- [3] Hosey, G., & Druck, P. L. (1987). The influence of zoo visitors on the behaviour of captive primates. *Applied Animal Behaviour Science*, 18, 19–29.
- [4] Kight, C. R., & Swaddle, J. P. (2011). How and why environmental noise impacts animals: An integrative, mechanistic review. *Ecology Letters*, 14, 1052–1061.
- [5] Larsen, M. J., Sherwen, S. L., & Rault, J. L. (2014). Number of nearby visitors and noise level affect vigilance in captive koalas. *Applied Animal Behaviour Science*, 154, 76–82.

-
- [6] Leighton, T. G. (2007). What is ultrasound? *Progress in Biophysics and Molecular Biology*, 93, 3–83.
- [7] Long, M. (2014). *Architectural acoustics*. 2nd ed. Waltham: Elsevier.
- [8] McKenna, M. F., Shannon, G., & Fristrup, K. (2016). Characterizing anthropogenic noise to improve understanding and management of impacts to wildlife. *Endangered Species Research*, 31, 279–291.
- [9] Milligan, S. R., Sales, G. D., & Khirnykh, K. (1993). Sound levels in rooms housing laboratory animals: An uncontrolled daily variable. *Physiology and Behavior*, 53, 1067–1076.
- [10] Morgan, K. N., & Tromborg, C. T. (2007). Sources of stress in captivity.
- [11] *Applied Animal Behaviour Science*, 102, 262–302.
- [12] National Institute of Health Consensus Report. (1990). Consensus conference. Noise and hearing loss. *Journal of the American Medical Association*, 263(23), 3185–3190.
- [13] National Research Council. (2011). *Guide for the care and use of laboratory animals* (8th ed.). Washington, DC: The National Academies Press.
- [14] Orban, D. A., Soltis, J., Perkins, L., & Mellen, J. D. (2017). Sound at the zoo: Using animal monitoring, sound measurement, and noise reduction in zoo animal management. *Zoo Biology*, 36, 231–236.
- [15] “The schizophrenia”. Available from: <https://www.claude.ai/> [Accessed 5 february 2024].