Alice in Wonderland Syndrome: Distorting Perceptions in the Brain

Nicole Yeung

In Lewis Carroll's famous children's storybook "Alice's Adventures in Wonderland," the protagonist Alice initially encounters size-distorting challenges as she arrives in Wonderland. In further detail, she shrinks dramatically after consuming foreign liquid from a bottle labeled "Drink me." Within moments, Alice discovers a miniature cake in a box spelling "Eat me," leading to tremendous physical growth. Although her experience is entirely fictional, researchers and scientists have identified a neurological condition suggesting that certain individuals may perceive peculiar size changes with symptoms that closely resemble her situation. This condition is often called **Alice in Wonderland Syndrome** (AIWS).

Alice outgrowing a room (photo illustrated by John Tenniel)

Introduction

Alice in Wonderland Syndrome, a neurological condition, happens when the brain's perception of the size of one's body and external objects is distorted. The size of particular body parts or the

whole image may seem abnormally large or small, appearing farther or closer than reality in certain cases. Furthermore, it is a brain-related condition that influences the mind's perception of oneself and surrounding objects rather than directly affecting the body. Alice in Wonderland Syndrome was named by British psychiatrist John Todd in 1955, who deemed that the size-warping experiences bore a resemblance to Alice's adventures from Carroll's fictional story.

Below is the list of possible visual distortions experienced by AIWS patients:

- **Micropsia:** objects appear too small
- **Macropsia:** objects appear too large
- **Metamorphopsia:** characteristics of shapes including height and width appear warped (typically when straight lines seem bent or curvy)
- **Pelopsia:** objects appear closer than reality
- **Teleopsia:** objects appear farther than reality

Causes, Symptoms, and Diagnoses

The AIWS, being named after a children's storybook, is coincidentally mostly found among children. About ⅔ of cases occur in people under 18 (up to 30% of teenagers encounter brief exposures to AIWS symptoms, but more data is required to make conclusions). Research on AIWS is scarce because fewer than 200 major cases were reported from 1955 to 2016, and the condition is temporary and rare. In other words, AIWS is short-lived, and the effects don't last long. Therefore, no exact criteria for causes, symptoms, and diagnoses exist.

Alice's long neck (illustrated by John Tenniel)

Causes

Although half of the AIWS cases have unknown causes, many suspect that temporal lobe epilepsy, brain tumors, migraines, and particular infections, including the Epstein-Barr virus, are some possible sources for the condition. In adults, the leading cause of AIWS is the occurrence of migraines. On the other hand, epilepsy, strokes, brain tumors, and stress, among other factors, are commonly recorded causes of AIWS in children.

Symptoms

During an episode of AIWS, people may experience sound distortion, migraines, and a lack of coordination or limb control. The passing of time may be distorted, and therefore, time may pass quicker or slower than in real life. A typical episode lasts several minutes, though some can last up to half an hour.

Diagnoses

In terms of diagnoses, patients will often be questioned about symptoms and undergo neurological exams. Careful diagnosis procedures may determine their state with AIWS or redirect them if they appear to have different conditions. Participation in questioning may sometimes help medical staff eliminate numerous diagnostic processes while encouraging others.

Ultimately, the current disagreement about the exact symptoms and diagnostic processes for AIWS results from commonly underdiagnosed or misdiagnosed patients. Possible diagnostic tests concerning AIWS are displayed below:

- **Imaging tests:** computer tomography or MRI scans that search for structural issues or changes in the brain that could lead to AIWS
- **Spinal tap:** when a thin layer of cerebrospinal fluid surrounds the brain and spinal cord, in which the fluid is searched for signs of infections that could be causing AIWS
- **Electroencephalogram:** analyzes the brain's electrical activity that could suggest signs of AIWS
- **Visual evoked potentials:** monitors the signals that the eyes send to the brain, looking to see that the eyes and optic nerves that are connected to the brain are functioning properly

Treatments

According to the *National Institutes of Health* (NIH), there is no proven effective treatment for AIWS. One key method to mend AIWS is to treat whatever's causing it (symptoms may vary, so a thorough investigation is required). For example, if the leading cause for AIWS in a patient is the occurrence of migraines, medication for migraines would be prescribed.

Conclusion

In conclusion, Alice in Wonderland Syndrome is a rare neurological condition that mostly affects children. Earning its name from a classic children's storybook, AIWS is known for manipulating how the brain perceives the size of the owner's body or surrounding objects, similar to Alice's

size-warping challenges from the written work. Fun fact: Lewis Carroll, the author of Alice's Adventures in Wonderland, has been suspected of writing about his symptoms of AIWS in his storybook. Unfortunately, there is no concrete evidence to determine whether he suffered from the condition or intentionally wrote about it.

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