"The Fortunate Unhappy"
A Potential Remedy for schizophrenia

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Imagine being in a room surrounded by empty faces of characters speaking with monotonous voices. You may understand the words they say, but you are still baffled by their meaning. Unable to make a connection with anyone, you feel despondent and lost. In reality, the menagerie of the unknown was just as normal as any daily interaction, but without the ability to read emotions. Schizophrenia is classified as a mental disorder that affects social behaviors and thought process. It is known to cause abnormal movements and psychosis in the form of paranoia and the occurrences of extreme hallucinations. The scenario in the room filled with ubiquitous confusion represents a symptom of schizophrenia that is constantly overlooked by the public and media: the inability to visually recognize emotions. Those suffering from schizophrenia are able to discern their own emotions, but can not discern those of others, presenting a serious impediment in social and neurological development (Dryden-Edwards 1). People with schizophrenia are not indifferent to feeling; their ability to empathize is just greatly hindered. A possible solution to this social dilemma is a neuropeptide known as oxytocin, which is currently used to treat similar symptoms in autism (Marazziti 698). Unfortunately, the synthesized hormone has not been widely tested as a treatment for schizophrenia. Subsequently, the complete relation between schizophrenic behavior and oxytocin is yet unknown.

People that suffer from schizophrenia often have biased opinions of themselves and others. In some cases they are conceited and sometimes suffer from delusions of grandeur and elitism. In other cases they are depressed, self conscious, and have very low self-esteem (Pauly, et al. 1). Understanding extreme emotions can lead to understanding the full effects of oxytocin in emotional comprehension. Recently, the Department of Psychiatry and Psychotherapy in Germany partnered with the Department

of Psychology of Columbia University to conduct a study comparing these extreme self-conceptions constant found with schizophrenia and how they affect the understanding of emotions. Fifteen patients with schizophrenia were categorized into the "positive symptoms" or "negative symptoms" regarding their self-perception. Then fifteen mentally "healthy" subjects were found and paired with a coinciding patients of similar age and background. Then all participants of the test were run through a multi-part experiment. In the first experiment, the thirty were shown a list of random adjectives of positive and negative connotation and were asked to relate the words to themselves, intimate others, or others in general. In the second procedure, a list of random personality traits are shown again with the addition of new "neutral" adjectives and the subjects were asked to perform a "lexical task" in which they would determine whom they had previously ascribed the word to, or if it was a new word altogether (Pauly, et al. 5).

In encoding the results, the scientists of Colombia discovered that regardless of whether the patients were diagnosed as positively or negatively symptomatic they experienced similar test results. Schizophrenic patients underperformed the healthy subjects in the tests regarding social pictures and emotion recognition by more than 10%. However, they were surprisingly more adept at recognizing both negative and positive words they had already seen (Pauly, et al. 5). It is already understood that people suffering from schizophrenia often have biased opinions of themselves, but researchers did not expect that schizophrenics would perform significantly better at the lexical task. The study proves that schizophrenia patients have similar intellectual capacity as their counterparts, even though they do not possess the ability to access emotions as easily. The emotion complex that decreases performance and memory functions in social situations is not psychological, but has a physiological origin.

The key to understanding schizophrenia lies in the physiological roots of the disease. The alteration of functions in the brain that causes schizophrenia to occur is located in the amygdala, which is known as a key component of the limbic system. This system is crucial in processing emotions and the amygdala is specifically in charge of managing emotional stimuli. (Domes 1187). In another main

part of the limbic system, the hypothalamus, oxytocin is produced by a large aggregation of neurons alongside another hormone known as vasopressin (Marazziti 698). Studies suggest that it could also play a significant role in managing social memory and behavior in the amygdala. A study by Zurowski B. Gamer published in PNAS where oxytocin was tested regarding emotional and facial recognition suggests that oxytocin levels are "critically important for eye movements and attention" and are directly related to increasing "eye movements and attention." Where the focus of those being tested were "initially centered on the mouth" to interpret an emotion, after oxytocin was introduced, the subjects began looking at the eyes, demonstrating an understanding of the part of the face that is most significant in determining emotions.(Averbeck 9034). Furthermore, oxytocin could possibly be administered to counter some of the symptoms of schizophrenia at the root of the problem (Domes 1187).

In order to determine if oxytocin could be used to alleviate some of the hardships specifically related to schizophrenia, the research of oxytocin conducted on patients without mental abnormalities must be considered. The information necessary for comparison was acquired in a double-blind study where thirteen males participated in two tests. The first test was conducted using a placebo intranasally and the second was conducted using oxytocin. Then the test subjects were shown pictures of faces depicting angry, fearful, or happy emotions while receiving an fMRI (functional magnetic resonance imaging) to capture brain activity. The patients are administered a contract dye injection that allows the MRI to monitor blood flow. If activity occurs in a specific part of the brain, expanding blood vessels will cause chemical changes by the delivery of extra oxygen, which will bring the contract dye to that area. In subjects who received the placebo, there were large amounts of activity, or percent signal changes, in the right amygdala. This means that on the fMRI, parts of the brain that changed in blood flow lit up on the scan. On the other hand, subjects that received oxytocin showed lower signal changes during the recognition of angry, fearful, and happy faces. The significant difference between activity can be related to the application of oxytocin (Domes 1189). The "lighting" of the brain during the scan

indicates the work the neurons in the amygdala experience in interpreting emotional stimuli; the lighter the color of a specific part of the brain, the more processing the neurons are going through. Precise and quick decisions occur when the neurons decipher information quickly, meaning they do less work and light up for shorter amounts of time. This is true for the patients on the test where oxytocin was administered. The fMRI showed less light in those specific scans, indicating the subjects were making faster decisions. (Domes 1188). If the results are uniform for all those who received oxytocin, then these results may also be true for schizophrenics.

The possibility that oxytocin is a remedy to faulted emotional interpretation is still being tested. The hormone is already being used in studies to increase social behavior and emotional recognition in autism and to assist general memory and learning (Marazziti 699). Given the significant connection that oxytocin has with schizophrenia and various other mental disorders, it could be used to reduce the harmful medications that presently treat the disease. Drugs such as olanzapine, risperidone, quetiapine, ziprasidone, and aripiprazole, which are referred to as “atypical anti-psychotics,” are used to treat mental illnesses involving social disorders or psychosis. The side-effects of anti-psychotics range from tremors and early-life dementia to kidney failure and obesity (Dryden-Edwards 4). Oxytocin's secondary effects are not so severe; the most common side-effects are nausea and vomiting. Rare cases, like all medicines, develop allergic reactions which can lead to a change in heart rate or blood clots if the medicine is still administered after reported allergy. The symptoms of oxytocin would only approach the side-effects of atypical anti-psychotics if the hormone was administered to a woman in early pregnancy, as it is frequently used to induce labor (Oxytocin Side Effects 1). Oxytocin may therefore provide a safer way to alleviate the stressful symptoms hindering the lives of schizophrenics.

Given the hormone's insignificant side-effects and the physiological symptoms of schizophrenia as shown in the Domes study, Oxytocin may be the best choice doctors have to enhance the lives of their patients. With around two million people in the United States diagnosed with schizophrenia

(Dryden-Edwards 1), the need for further study of the relation between schizophrenia and oxytocin is great. Unfortunately, a substantial amount of research is needed before any hormone can be widely accepted as treatment for a neurological disease: research that has not yet been conducted with oxytocin. Scientists have already determined the possible medical implications of the hormone, but somewhere in the struggle for scientific limelight, the cause became diluted. With time and support, oxytocin could be a significant solution to the predicaments of many.

Works Cited:

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