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The Effects of Substance Abuse and Psychosis: Can Cocaine Cause Schizophrenic Traits?

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Substance use is very prevalent in the mentally ill community (Farrell, Boys, Pebbington, Brugha, Coid, Jenkins, Taylor, 2002; Barnett, Werners, Secher, Hill, Brazil, Masson...Jones, 2007). Researchers believe that drugs are used as a coping mechanism for already present schizophrenic symptoms commonly known as self-medication (Tang et al., 2007; Hambrecht & Hafner, 1996). But not all of the mentally ill used drugs after their symptoms, some began the drugs prior to their mental illness (Hambrecht & Hafner, 1996). Other researchers questioned if some individuals may be more prone to psychosis than others. An individual's body mass index, or the age at which they first consumed the substance are two factors that the researchers considered to make an individual more prone to mental illness (Compton, Chein & Bollini, 2009; Rosse, Deutsch & Chilton, 2005). Finding a positive correlation between cocaine and psychosis could promote more serious prevention programs, possibly change the content of drug education, and adjust treatment programs. I propose a longitudinal study which predicts that individuals who use cocaine will experience psychosis many years after sobriety. Participants will take a questionnaire on their drug use and then throughout their sober life participants will be interviewed to assess their mental stability.

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Imagine raising six healthy children with minimal complications. That is, until the youngest child, Johnny, becomes involved with the wrong crowd of friends briefly in high school and begins using drugs. Once confronted with his drug problem, receiving treatment, and breaking away from unhealthy friends, his drug usage became a thing of his past. However, before you declare the issue resolved, you notice he became secluded and depressed. Hoping it is just a phase from maturing life changes, you try to wait it out. Little do you know, Johnny's mental state is deteriorating. Soon he is paranoid, delusional, and checked into a hospital at twenty-six-years old. He cycles in and out of the hospital first being diagnosed with

Organic Delusional Syndrome Disorder and ending with a diagnosis of schizophrenia (Flaum and Schultz, 1996).

This particular case study caught the attention of Flaum and Schultz (1996) because Johnny's age is considered old for a diagnosis of Schizophrenia. The average age for a patient to be diagnosed with Schizophrenia is twenty-one-years-old for men and twenty-seven-years for women (Comer, 2007). A genetic component has been linked to Schizophrenia, so not only was Johnny's age of diagnosis unique, but his family history is clean from any mental illnesses related to psychosis; schizophrenia is often evident in family histories. Could the drug use that Johnny experienced years before have contributed to his long-term mental illness of schizophrenia?

Psychosis, like Johnny experienced, is a mental state in which the individual is unable to differentiate reality from fantasy (Comer, 2007). Although the exact

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cause of psychosis is unknown, scientists have identified contributing factors such as substance abuse, stress, mental illness, or physical disorders (Comer, 2007). The primary mental illness that presents psychosis is Schizophrenia (American Psychiatric Association, 2000). Schizophrenia is a mental illness related to increased dopamine levels (Comer, 2007). These high dopamine levels affect each individual differently but commonly cause delusions, auditory, or visual hallucinations. Symptoms of Schizophrenia differ for every individual, but patients will experience both positive and negative symptoms from this mental illness. Positive symptoms are those that become present and include delusions, hallucinations, and disorganized thinking. Negative symptoms are those that are absent within the individual, such as social skills (Comer, 2007).

Substance abuse is known to be related to psychosis (Compton, Chien & Bollini, 2009; Farrell et al., 2002; Hambrecht & Hafner, 1996; Pihlgren & Boutros, 2007; Rosse, Deutsch & Chilton 2005; Tang, Kranzler, Gelernter, Farrer & Cubells, 2007; Satel & Edell, 2007; Weaver, et al., 2003;). Barnett et al. (2007) surveyed 139 individuals experiencing first time psychosis about their drug use. The prevalence of drug use was twice as much as the general population. Farrell et al., (2002) surveyed 3,142 prisoners asking inmates about their drug use and psychotic episodes. Inmates who were considered severely dependent on a drug were more likely to develop psychosis. Likewise, Wobrock, Sittinger, Behrendt, D'Amelio, Falkai, and Caspari (2006) tested cognitive abilities of recently diagnosed Schizophrenic patients with a known substance abuse problem. Results indicated that drug abuse began before the onset of Schizophrenic symptoms.

Two hundred and seventy six newly diagnosed patients with either Schizophrenia or paranoid symptoms were surveyed by Hambrecht and Hafner (1996). About one third of these mentally ill patients suffered with a substance abuse problem for more than one year before the onset of Schizophrenia or a paranoid disorder. The study also found that another third experienced their first signs of Schizophrenia within one month of substance abuse (Hambrecht & Hafner, 1996). This leads some researchers to conclude that two thirds of the substance abusers' are being influenced by substance abuse (Hambrecht & Hafner, 1996).

Research on substance abuse suggests that not only can drugs cause psychosis while intoxicated, but may also cause long lasting effects of psychosis (Pihlgren & Boutros, 2007; Compton et al., 2009; Satel et al. 1991; Hambrecht & Hafner, 1996). Many drugs including cocaine, alcohol, amphetamine and methamphetamine may cause psychosis while it is in an individual's system (Pihlgren and Boutros, 2007). These types of instances are called "substance induced psychosis. About 34-64% of

methamphetamine users will experience psychotic episodes up to five days after the methamphetamine leaves their system. Up to 21% will experience it for more than six months (Iyo, Namba, Yanagisawa, Hirai, Yui & Fukui, 1997 reviewed by Pihlgren & Boutros, 2007).

While most research starts with a sample of mentally ill patients and then asks about their drug experiences, Tang et al. (2007) did the opposite. They questioned whether the substance abuse was causing the mental illness, or if the mental illness caused individuals to self-medicate using drugs. Cocaine users in a substance abuse clinic were surveyed about their mental illness symptoms or experiences of psychosis. Many were found to suffer with some sort of illness. It was found that drugs were used to help cope with mental illness particularly in individuals suffering from ADHD (Tang et al., 2007).

Congruent to other studies Hambrecht and Hafner (1996) had reason to believe that individuals may be using drugs to self-medicate. Individuals who began experiencing schizophrenic symptoms prior to their drug abuse were attempting to relieve their symptoms by using the drugs. This led Hambrecht and Hafner (1996) to draw conclusions about coping mechanisms. Participants were asked how old they were when they first used each drug and compared that to the age they were when the onset of schizophrenic symptoms occurred. Researchers found that 42% of their participants coped with negative symptoms using alcohol and 28% tried using other drugs to manage their symptoms (Hambrecht & Hafner 1996); although, individuals did not seem to use the same coping mechanism for positive symptoms of schizophrenia.

While the self-medication theory would make sense for some individuals, there it is not possible to generalize this theory. Some individuals begin to experience their schizophrenic symptoms after their substance abuse problem. Satel and Edell (1991) suggest that certain people are more prone to developing psychosis from cocaine while sober than others. Using the Scales of Psychosis Proneness, researchers demonstrated that individuals who experience cocaine-induced paranoia have reported more schizophrenic symptoms during sobriety than those who had not experienced psychosis while high on cocaine. These symptoms indicate a proneness to psychosis (Satel & Edell, 1991).

Factors that seemed to cause more severe symptoms were a higher frequency of alcohol use, larger quantities of alcohol and earlier consumption (Compton, Chein & Bollini, 2009). The age of first alcohol use, as well as the age of first cannabis(marijuana) use, negatively correlated with higher or more severe schizophrenic scores (Compton, Chein & Bollini 2009). Individuals who had used cannabis had higher scores indicating more severe symptoms than those who had not used cannabis.

Those who are younger when beginning drug use are more prone to developing psychosis when sober

(Compton, Chein & Bollini's, 2009). Similarly, Rosse, Deutsch and Chilton (2005) found that those who are generally lighter in weight are more vulnerable to long term side effects. This study also focused specifically on cocaine and ruled out any participants with previous histories of psychosis. Actual Body Mass Index (BMI), as well as the ideal BMI of all participants were taken and compared with those who experienced cocaine-induced psychosis and those who had not.

The possibility that substance abuse might be responsible for long-term psychosis and possibly more severe mental illnesses is important to investigate. A better understanding of the relation between substance abuse and psychosis can initiate prevention and treatment programs. Education on the subject can save people from a life of hardship. While most people know that drugs are harmful and can cause significant damage, many do not suspect that it can cause permanent damage, including mental illness.

Substance abuse research is often complicated by subjects who use multiple drugs. Finding a substance abuser who tried only one drug is nearly impossible, making it difficult to isolate the variable (Barnett et al. 2007; Compton et al. 2009; Farrel et. al. 2002; Hambrecht & Hafner, 1996; Tang et al., 2007 ; Weaver et al. 2003). While polysubstance use is a problem, some researchers, such as Tang et al. (2007) and Satel and Edell (1991), believe that cocaine is the drug influencing psychosis. An experimental study on this subject in humans would be ethically impossible. Most studies on this subject are correlational with very few longitudinal studies and small sample sizes. The proposed study will be longitudinal with a very large sample size. Participants will be recruited from a substance abuse rehabilitation facility and asked about their cocaine use. Throughout their sober life they will be tested for psychosis. I hypothesize that drug use, specifically cocaine, will cause psychosis even years after sobriety.

PROPOSED METHOD

Participants

Participants will be recruited from a substance abuse facility and then asked about any psychotic experiences. Four hundred randomly selected substance abuse facilities will be screened for any psychosis related mental illnesses beyond substance abuse. A goal of at least 2,000 participants within the ages of 18-30 with a history of cocaine abuse will be recruited. A large sample size is desired due to the possibility of participant's relapse in sobriety. Participants with families that also present psychosis related mental illnesses will be excluded from the study to alleviate any genetic predispositions.

Materials

The Cocaine Experience Questionnaire (Satel & Edell 1991) will be used to better understand the participant's first age of using cocaine, what method they used and if they experienced any psychosis during or after the drugs leave their system. The Structured Clinical Interview for DSM-IV-the Model C Differential Diagnosis of Psychotic Disorders (American Psychiatric Association, 2010) will be used for all screening of mental instability.

Procedure

This study will be a 25 year long longitudinal study involving interviews with the recruited participants. During the first interview participants will be asked to fill out the Cocaine Experience Questionnaire as well as their history and their family's history with mental illness besides substance abuse. All subsequent sessions will ask if the participant has experienced any relapses during the five year gap. After sobriety has been confirmed, the Structured Clinical Interview for DSM-IV-Model C Differential Diagnosis of Psychotic Disorders will be used to screen for any psychosis. Those who maintain their sobriety will be questioned again every five years until their 25 year anniversary of sobriety.

CONCLUDING REMARKS

Significance

Finding a connection between cocaine and psychosis related mental illness would make many contributions to the fields of education, treatment, and future research. It is expected that the majority of participants will be diagnosed with a form of psychosis such as Schizophrenia after years of being sober. A correlation between cocaine and psychosis would promote more serious prevention programs and possibly change the content of drug education. Students who learn that their chances of a lifetime of mental illness are greater if they use cocaine may be persuaded to not use it. Treatment centers would need to adjust how they treat and interact with clients, including awareness that cocaine users are at risk for psychotic episodes.

Limitations

In this study, it will be difficult to isolate cocaine due to the fact that many drug users experiment with different drugs. Only cocaine was taken into account. Comorbidity of mental disorders is prevalent in this population and must be considered. A lifestyle of drug use can lead to poverty, laced drugs and many other unhealthy situations; it is possible that the drugs themselves are not

responsible for the mental illness, but, the lifestyle in general that is responsible. The proposed study is a correlational so results should be interpreted with caution.

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