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This academic journal is a compilation of research that represents the many disciplines of Oklahoma City University, covering topics from nursing, literature and religion, to education and the sciences. This diversity makes *Stellar* representative of all the exceptional undergraduate research at Oklahoma City University.

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Neurological Understanding of Schizophrenia and Treatments

Kyle J. Copp & Minh B. Ton

Abstract.

Schizophrenia is a chronic psychological illness that affects approximately 24 million people worldwide and 2.2 million people in the United States (Mayo Clinic, 2016). This paper provides a concise review of schizophrenia and discusses the available treatment options and what further studies can be done to help understand this traumatizing psychological disorder. Even though schizophrenia remains a mysterious disease with various components, treatments such as antipsychotics (Clozapine), electroconvulsive therapy, and coordinated special care can massively improve a patient's quality of life.

Overview.

Schizophrenia is a severe mental disorder in which people interpret an abnormal reality. The chronic condition requires continuous treatment throughout one's life (Mayo Clinic, 2016). Schizophrenia often presents itself earlier in males than it does in women. In men, the onset is usually in the teens or twenties, while in women, symptoms begin in their late twenties or thirties (Garrett, 2015). This complex disorder has a variety of symptoms, including hallucinations, delusions, paranoia, disordered thoughts, impaired behavior in daily functioning, inappropriate emotions or lack of emotions (Garrett, 2015). One of the most common disorders affecting people worldwide, schizophrenia is a complex psychological disorder that affects the brain in many ways and constantly receives research attention. New treatments are being searched for every day. Although schizophrenia remains a

mysterious disease with various components, treatments such as antipsychotics (Clozapine), electroconvulsive therapy, and coordinated special care can massively improve a patient's quality of life.

Symptoms.

Contrary to popular belief and the portrayal of this illness throughout the media, schizophrenia does not actually mean “split personality.” The term has more to do with the distortion, or “split off,” of reality in one's thoughts and emotions (Garrett, 2015). Most authorities have concluded that the symptoms of schizophrenia fall under two categories: Positive and negative. Positive symptoms are the most identifiable and include behaviors which are not seen in non-affected people (Patel, Cherian, Gohil, & Atkinson, 2014). They include psychosis, delusions, hallucinations, and other strange behaviors. Positive symptoms are often acute and respond well to treatment with an easy prognosis, except for the occasional relapse. Negative symptoms are characterized by a decrease in normal behaviors. Negative symptoms include a lack of or inappropriate emotion, impaired attention and speech, lack of motivation, and failure to experience pleasure. These symptoms are usually chronic with a more difficult prognosis, and they do not respond as well to treatments (Garrett, 2015). Furthermore, depending on the severity of the disorder, it may have additional adverse effects. Anxiety, depression, obsessive-compulsive disorder, and substance abuse are often other prevalent problems patients deal with (Patel, Cherian, Gohil, & Atkinson, 2014).

Diagnosis.

Diagnosis for schizophrenia is often determined by an assessment looking for the specific symptoms as detailed in the

Diagnostic and Statistical of Mental Disorder, Fifth Edition (DSM-5) (Farinde, 2017). Two or more symptoms must occur for the duration of a month or longer. It is common that there is a great occurrence of negative symptoms in the early stages of schizophrenia. In addition, to authorize the diagnosis of schizophrenia, symptoms of other psychological disorders must be ruled out. It is crucial to differentiate the disorder from other conditions. This can be performed through the continual examination of a patient over an extended of period time, the recommended length being 6 months (Farinde, 2017). It is also crucial that schizophrenic symptoms not be confused with a patient's use of illegal drugs, or the negative side effects of drugs. Physicians must complete a full background and patient history before they can proceed to the physical exam. MRI and CT scans can be used to examine the brain and notice damages to specific-related areas (Mayo Clinic, 2016).

Causes.

Although schizophrenia is one of the oldest psychological disorders known to humankind, the exact causes are still under thorough investigation. Of course, we must consider genetics and its role in the inheritance of this disorder. Evidence supports that schizophrenia does contain a genetic component and is heritable. Gottesman, McGuffin, & Farmer (1987), and Tsuang, et al. (1991) completed a study proving that schizophrenia is higher among relatives of people who have the disorder than it is in the general population. Lenzenweger and Gottesman (1994) also performed a study indicating that there is an increased risk in the disorder related to the genetic relatedness of family members. Identical twins' risks were three times higher than fraternal twins' risks. Moreover, Gottesman and Bertelsen (1989) proved that the offspring of an identical twin who was not schizophrenic was just as likely to become schizophrenic as the offspring of the identical twin who was

schizophrenic. More than 70 genes have been linked to schizophrenia (Hosak, 2013). The genes are relatively common and related to brain development, plasticity, immune response, and hormones. Researchers have concluded that genes are only half of the story and that environmental factors must be considered as well. The genetic component is only related to the vulnerability of the illness (Garrett, 2015). Environmental factors and the genetic vulnerability usually surpass the threshold and cause the onset of the disorder. External environmental factors include a death, job problems, divorce, etc. Internal environmental factors can be a determinant as well, including factors like puberty changes, diet, infection, or exposure to toxic substances (Garrett, 2015). Studies have concluded that environmental factors influence genes by increasing or decreasing their expression and functioning (Tsankova, Renthal, Kumar, & Nestler, 2007). Complications during pregnancy have led researchers to believe schizophrenia may begin there (Garrett, 2015). Bradbury and Miller (1985) performed a study with over 50,000 schizophrenic patients that suggested more people who develop this disorder are born in the winter and spring months of January through May.

Pathophysiology.

Within the brain, abnormalities in neurotransmitters have been the focus of research and have provided us with the most theories for the pathophysiology. The neurotransmitters involved in schizophrenia are dopamine, glutamate, and serotonin. Dopamine is an important neurotransmitter within the brain that has many functions, most notably is its role in feelings of reward and pleasure. After much research was completed, the dopamine hypothesis was established, which states that there is excessive dopamine activity in the brains of schizophrenic patients. Activity at the D2 receptors has the greatest effect, producing psychotic symptoms. It is believed that these are the most sensitive, and blocking them appears to be an

effective treatment (Garrett, 2015). The details have not been studied enough in depth but dopamine is suggested to have the greatest effect in the mesolimbic system (Fardine). As treatments targeting dopamine became less effective and produced negative side effects, research examining other neurotransmitters was completed.

Serotonin, another important neurotransmitter, was discovered to play a role in schizophrenia. The serotonergic system was considered because the 5-HT receptors are affected when on hallucinogenic drugs, which produces schizophrenic-like symptoms. Most notably, this occurs with LSD use. Serotonin activity is increased because of schizophrenia. Glutamate, the most important excitatory neurotransmitter, has gained similar attention. It was discovered as an affected neurotransmitter when atypical antipsychotic drugs increased its activity. Also, PCP produces many symptoms mimicking schizophrenia. The drug works by inhibiting the NMDA receptors, which are a subtype of glutamate receptors (Garrett, 2015). Thus, the glutamate theory was established. The theory stated that the decreased function of the NMDA receptors results in an increase in glutamate and an increase in dopamine downstream. The effect of these two neurotransmitters on the mesolimbic pathway is responsible for both the positive and negative symptoms of schizophrenia (Lisman, et al.; Sendt, Giaroli, & Tracy, 2012).

Aside from neurotransmitters, the brain tissue itself shows many notable anomalies. The most significant is the deficit of both gray and white matter in the brain tissue of more than 50 brain areas. Ventricle enlargement is a cause of paucity in several brain areas. There is an activity increase in the hippocampus and orbitofrontal cortex; but, there is decreased activity in the dorsolateral prefrontal cortex (Schobel, et al., 2009). One of the most important functions of the brain is its ability to fire signals to multiple areas while remaining synchronized and promoting complex cognitive

actions. In schizophrenic patients, because of the reduced white matter connections, there is a decrease in synchronized activity between the frontal and thalamocortical circuits (Garrett, 2015).

Psychological Effects.

Schizophrenic patients lack theory of mind. Theory of mind is the ability to infer the mental state and thinking process of someone other than oneself. A study was done by Cambridge that included telling patients stories of deceptions and false beliefs. The researcher required the patients to answer questions about memory/reality and to infer a character's thoughts. It was found that schizophrenic patients do significantly worse on questions about mental states (Frith, Corcoran, 1996). Most people have a concept of self-awareness and they have an awareness of their own goals, they understand their own intentions, and they understand the intentions of others. However, in schizophrenics, these are considered "metarepresentations," and they have all been altered. These three outlined areas of self-consciousness in the theory of mind correspond to three types of cognitive impairments and correlate directly with schizophrenic symptoms. A lack of will is shown without awareness of a goal. Without realization of one's own intentions there is a lack of higher level self-monitoring, leading to aberrant experiences of actions. Then, with damaged consciousness of the intentions of others, delusions are experienced. For example, a series of situations and how they would be perceived by a schizophrenic will be shown. First, a goal of "I must catch the bus" is set. With the impairment of schizophrenia, this could become "I must fly the plane," or "I am a pilot;" this is an example of extravagant ability or identity. Detached content is when they hear voices or experience delusions of control, inserting comments and thoughts where they do not belong. Then, no goals or no effect would present itself in negative symptoms such as lack of will,

poverty of action, thought, and social withdrawal. (Frith, 2014.) Another important behavior seen in schizophrenia patients is word retrieval failure, a symptom of schizophrenia found in a study done by the British Journal of Psychiatry (Allen, Liddle, Frith, 1993). This could explain the poverty of speech and incoherence associated with schizophrenic patients.

Treatments.

Some of the basic types of treatment for schizophrenia include antipsychotic medication, psychosocial therapy, and coordinated special care. Antipsychotic medications come in the forms of pills, liquids, and injections, and are administered once to twice a month. Psychosocial therapy can also be used to help schizophrenic patients perform everyday functions such as working or going to school. A study found that individuals who participated in psychosocial therapy had a lower chance of relapse than individuals who didn't. Coordinated social care is a complex method of care including medication, support in one's career or education, and family involvement to help schizophrenic patients lead an independent and productive lifestyle (National Institute of Mental Health Staff, 2016).

Not all patients are responsive to antipsychotic medication. Those who are not responsive are said to have treatment-resistant schizophrenia. One type of antipsychotic found to be successful in treating treatment-resistant schizophrenia is Clozapine (Makoto, 2017). Studies have shown that Clozapine causes significant changes in DNA methylation in peripheral leukocyte. These DNA changes are shown during one year of treatment. Clozapine treatment is necessary for proper cell substrate adhesion and cell matrix adhesion. These are mechanisms in which cells interact with their environment, migrate, organize and differentiate. Malfunction in the pathway of cell adhesion can increase a person's susceptibility to developing schizophrenia; therefore, Clozapine can be a useful

treatment to normalize this mechanism by altering the gene expression of these molecules via DNA methylation.

Some of the problems in treating patients with schizophrenia are due to the poor adherence of the antipsychotic drugs. Patients are usually treated with either oral, first generation long acting injectable, or second generation long acting injectable antipsychotics. However, studies have shown that these medications do not show the same level of adherence when administered to schizophrenic patients. Second generation long acting injectable antipsychotics were found to be better at both adherence and persistence in comparison to both oral and first generation long acting injectable antipsychotics (Pilon, 2017).

Patients with schizophrenia tend to have an abnormal expression of cell factor. Medication combined with modified electroconvulsive therapy can work to alter the expression level (Yong-Fang, 2016). However, modified electroconvulsive therapy itself cannot change the cell factors, but it can help to improve schizophrenia symptoms. This indicates that modified electroconvulsive therapy works using a different mechanism other than altering cell expression.

Schizophrenic patients performed poorly on a game called the Wisconsin Card sorting test, which requires players to change their strategies according to the flow of the game. This is due to hypofrontality or lack of dopamine in the prefrontal cortex. Amphetamines have been found to help schizophrenic patients perform better on this test by increasing the activation of blood flow to the dorsolateral prefrontal cortex (Garret, 2015).

Garret also stated that nicotine can suppress symptoms such as auditory gating, and it can improve visual tracking, working memory, and cognitive ability (Alder et al., 2004; Kumari & Postma, 2005). Auditory gating is when a patient fails to suppress stimuli such as environmental sounds, but instead perceives them as threatening sounds. Nicotine works to replace the lost functions of

nicotinic acetylcholine receptors in the prefrontal cortex, where hypofrontality is usually experienced (Garret, 2015).

Conclusion.

Schizophrenia is a mental illness that can disable a person from performing daily tasks. The severity and symptoms of the disorder depend on its effects on different areas of the brain. Even though it has a strong genetic connection, various environmental factors can also play a role, from an infection that causes an immune response or even season of birth. Together, genetic and environmental factors overcome a threshold and the onset of the disorder begins. It's difficult for scientists to pinpoint a specific treatment because schizophrenia affects more than 50 areas of the brain. There is no cure for this disease. However, treatments such as modified electroconvulsive therapy, second generation long acting injectable antipsychotics, Clozapine, amphetamines, and nicotine were found to be effective in decreasing the symptoms of schizophrenia. We are still far from developing a cure for schizophrenia, but patients suffering from this condition do have various options of treatment and can lead functional lives.

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The Pseudoscience of Anti-Vaccination Groups

Tammy Phillips

In 1998, a paper largely written by Andrew Wakefield was published in the British journal *The Lancet* claiming that a significant link existed between vaccination and the onset of autism. Although the paper has since been retracted by the journal, the debate on the connection between vaccination and the development of autism in children continues. Several anti-vaccination groups, aptly named “anti-vaxxers” in some circles, have set forth many reasons for protesting vaccine usage. According to Terence Hines’s book *Pseudoscience and the Paranormal*, “an irrefutable hypothesis is a sure-fire sign of a pseudoscience” (Hines 15). This essay aims to provide an overview of the common “irrefutable hypotheses” used by anti-vaxxers, and to expose the pseudoscience underlying each argument.

One of the fervent arguments that anti-vaxxers cling to is that vaccines contain toxic chemicals that endanger their children’s health. While it is true that vaccines sometimes contain substances like mercury and formaldehyde, these are present at such low levels that they do not pose any serious threat to a person’s health. In fact, these are naturally-occurring substances which exist in many of the foods people eat, as well as inside the human body (Mitkus). The most popular vaccine ingredient that anti-vaxxers tend to condemn is thimerosal, a mercury-based preservative used to prevent contamination of multi-dose vials of vaccines. Anti-vaxxers focus especially on the fact that thimerosal was removed from U.S. childhood vaccines in 2001, claiming this as proof of its dangerous side-effects (Willingham). However, this was actually done as “part of a broader national effort to reduce all types of mercury exposure

in children... It was done as a precaution” (“Vaccines”). This example highlights Hines’s idea that “there is a general unwillingness on the part of promoters of pseudoscientific claims to look carefully at the evidence they put forth to support their claims” (Hines 16). In other words, anti-vaxxers often skew evidence to support their claims whilst ignoring the parts that undermine them.

Another assertion that anti-vaxxers cite is that there is no longer a need for vaccines because most dangerous diseases have been virtually eliminated from developed countries like the United States. Upon analysis, it is easy to see that this belief ultimately results in an ironic cycle, because as soon as a population no longer “needs” vaccines because of the low infection rates, it is likely that an outbreak will occur shortly after. This belief introduces an interesting paradox. Such outbreaks could be prevented if people continued vaccinating! Effective anti-vaccination campaigns have caused vaccination rates to suffer in the past few years, allowing for the perpetuation of measles outbreaks in places like California, Ohio, and the District of Columbia (“Measles”). Even given this information though, anti-vaxxers still stubbornly hold on to the idea. This is an example of what Hines calls the failure of anti-vaxxers to “change or update their theories in light of new evidence” (Hines 19).

The final contention that will be discussed in this essay is the idea that vaccines cause autism, as mentioned in the introduction. While it is true that there have been more autism diagnoses in recent years, countless peer-reviewed studies have shown that there is no higher incidence of autism among vaccinated children than among unvaccinated children (Sowell). In fact, the increase in autism diagnoses is more likely due to changes in medical definitions and heightened public awareness of the disorder. When such studies are offered to anti-vaxxers though, they simply point to other less scientifically-based studies which support their beliefs. They go on to claim that their studies were conducted more truthfully and with

less bias and therefore should hold greater weight in terms of evidence. Especially when looking to the study that sparked the entire debate, skeptics have thoroughly torn apart every aspect of Andrew Wakefield's study, showing its fraudulence and the unreproducible nature of its results. As Hines writes, however, this is simply an attempt by the pseudoscientists to push another "nonfalsifiable hypothesis that proponents use to explain away every failure by the skeptics" to disprove the anti-vaxxers' claims (Hines 27).

There are certainly acceptable reasons for people to go unvaccinated. Those who are not eligible for some vaccines, for example, have ample reason to be concerned about getting vaccinated. Such exceptions include infants, pregnant women, elderly or immunocompromised individuals. Yet, it is precisely because of these people that vaccinations are all the more important for those who are eligible. This practice protects such individuals from the spread of contagious diseases, a concept known as community or herd immunity (National Institute of Allergy and Infectious Diseases). According to Hines, this makes the pseudoscience used by anti-vaccination groups one of the "more damaging pseudosciences" because it can potentially lead to a higher rate of morbidity and preventable illnesses in those who choose not to vaccinate even though they can (Hines 41). Vaccines are one of the greatest medical breakthroughs in history, wiping out a score of formerly fatal childhood diseases. Hopefully, vaccine skepticism does not bring some of those diseases back from near extinction.

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The Investigation of Nurse-Led Education for Transitioning Congenital Cardiology Patients

Kayleen R. Merritt

As nurses, patient care and advocacy is the pinnacle of the profession. There are many subjects associated to patient care including pain management, infection control, and medication administration. However, an often overlooked aspect of patient care is the nurse's role in patient education. Patient education allows for patients to feel ready for discharge and instills them with the independence they need to maintain an autonomous lifestyle. The current problem is the lack of nurse-led intervention education in congenital heart disease clients who are transitioning from an adolescent phase of life to the adult phase of life. The concern lies in the fact that most adolescents rely on their parents and guardians to administer care and to be knowledgeable about their disease. When the time comes for the congenital heart disease patient to begin taking care of themselves as adults, the proper preparation and education is not present, often leading to hospitalizations and patient anxiety (Mackie et al., 2014). Researching the impact of patient education, the current lifestyles of adolescents - and adults - who have congenital heart disease, and the practice of the patient's parent are all necessary to provide patient-centered care with a focus on preventing further complications in an already sensitive cardiac system (Chiang et al., 2014; Mackie et al., 2014; Rempel, Ravindran, Rogers, & Evans, 2012; Riley et al., 2011; Wilson & Chando, 2014; Yang, Chen, Wang, Gau, & Moons, 2013). The purpose of this literature review is to identify the experiences and outcomes of congenital heart disease patients who have received nurse-led intervention education, to explore the quality of life of the

patients and caregivers, and to investigate the benefits of nurse-led education in the transition phase for patients and their families.

Review of the Literature

A review of the literature was constructed through use of the EBSCO Host database. Key words to select the literature such as congenital heart disease, adolescent heart disease, transitions, nurse-led interventions, and nurse education were used. Research was limited in this area due to the specific patient population, generating about 80 results. Each article employed for this review is from the last five years, and is a qualitative or quantitative study. The following is a comparison of the articles researched on the patient and family benefits of nurse-led education, and of the life experiences of patients with congenital heart disease.

Due to increasingly successful medical technology, more individuals with congenital diseases are seen living beyond the past predicted life expectancies. Many patients and supportive caregivers feel anxiety and stress when coping with a congenital disease due to the lack of education provided to them during transition (Chiang et al., 2014; Rempel et al., 2012; Riley et al., 2011).

In 2014, Chiang et al. conducted a descriptive phenomenological study to describe the life experiences of youths with congenital heart disease, and explored the complexities of the transitional phase the patients experienced. The study took place at two medical centers in Taiwan through a series of semi-structured interviews of thirty-five patients between 15 and 24 years old. When data was analyzed using the descriptive phenomenological method, the interview findings presented a “dynamic process of moving between invisible defects and coexistence with the disease” (Chiang et al., 2014). Several categories were named to compare the experiences of the individuals. These included invisible defects, personal conflict, personal imbalance, emotional suffering, social

encounters, and coexistence of the individual and the congenital heart disease. The results of the study indicated that the congenital heart disease patient's transition phase is an important time to learn about their specific disease, to learn emotional coping mechanisms to decrease anxiety, and to learn self-care strategies to maintain the best health during their disease process (Chiang et al., 2014).

In contrast, Riley et al. (2011), focused on the education and support needs of the patient who is already in the adult phase of life with a congenital heart disease. This qualitative study focused on the adult population considering the recent reduction in mortality due to medical and surgical advancements. This study was done to explore quality of life, emotional health, and the individual ideologies about health amongst adult patients with congenital heart disease. The study took place at an outpatient clinic in the United Kingdom with 99 patients between 17 and 67 years old, all diagnosed with some form of congenital heart disease. A cross-sectional questionnaire was given to the patients, and the data analyzed with descriptive statistics revealed that adults with congenital heart disease feel they have a poorer quality of life than the general population due to anxiety, depression, and illness beliefs. This study's results indicated the importance of providing emotional support and appropriate education to patients in order for them to feel more in control of their disease (Riley et al., 2011). Contrastingly, a study done by Rempel et al. in 2012 at the University of Alberta in Canada focused on caregiving education specifically for parents. A qualitative, constructivist grounded theory study was conducted to describe the process of parenting in those individuals who parent a congenital heart disease patient. Twenty-five parents and twenty-eight grandparents were interviewed and several trends in the caregiver reports were analyzed. These analyzed trends included adjusting to new events, growing very attached to the children, waiting for the unexpected to occur, and coping with new challenges. This study concluded

through a “multi-step iterative process” (Rempel et al., 2012, p. 621) that an in-depth understanding of the parenting process while under the pressure of caring for a sick child is necessary for health care professionals, especially nurses, to provide direction for proper educational interventions, and that this understanding can decrease the emotional anxiety these parents face (Rempel et al., 2012). Comparatively, Chiang et al. (2014), Riley et al. (2011), and Rempel et al. (2012) each conducted qualitative studies focused on how the patient’s congenital disease conditions affect quality of life, emotional status, and caregiver quality of life. These studies’ results can be implemented into nurse-led interventions.

In contrast, in 2014, Wilson and Chando conducted a quantitative, survey-based study to discover the effectiveness of a bead-based program in Australia. This study assessed the quality of acknowledgement from the nurses to the patients and families. The beads were distributed, based on procedures and treatments the congenital heart disease patient was receiving, to supply a knowledge-based visual aid to the patient and caregivers. A sample size of 162 mothers and 136 fathers was implemented. Data was analyzed from the numerical rated surveys using “IBM SPSS, version 19” (Wilson & Chando, 2014, p. 441) and revealed that the majority of participants felt acknowledged and educated by the nurses. The study concluded that the beads program provided a tangible way for families and patients to learn about the patient’s heart condition and allowed nurses to incorporate visual education into their interventions (Wilson & Chando, 2014). In comparison to the Wilson and Chando (2014) study, Mackie et al. (2014) conducted a quantitative, clinical study with the intention of discovering the outcomes of nurse-led transition interventions directed to adolescents to improve the patient’s knowledge of their disease. A sample size of 58 participants at a clinic in Canada was analyzed through statistical analysis of a completed “Transition Readiness Assessment Questionnaire” (Mackie et al., 2014, p. 1114). The

results revealed that after a 1-hour nurse-led transition intervention, patients showed an improvement in self-management and cardiac knowledge scores. This study described the importance of implementing a routine educational program for the youths going through the transition phase. Lastly, in contrast, a quantitative study performed in Taiwan by Yang et al. (2013) focused on base knowledge of congenital heart disease in patients and their parents using a Leuven Knowledge Questionnaire for Congenital Heart Disease. This study sampled 116 adolescents between the ages of twelve and eighteen, and one of the patient's parents. Through statistical analysis, it was found that less than half of adolescents and parents were able to successfully complete the questionnaire. It is known that adolescents adopt most of their education from their parents. This study revealed that it is crucial to implement nurse transition education programs in order to allow the patients and their parents learn about their specific congenital heart disease (Yang et al., 2013).

Recommendations

Based on this literature review, it is found that patient and caregiver satisfaction and confidence increase when care involves a nurse-led intervention education program (Mackie et al., 2014; Yang et al., 2013). Varying media during the developmental transition from adolescence to adulthood in the patient's life can assist even further (Wilson & Chando, 2014). These practices can increase the quality of life, provide emotional support, and employ basic knowledge of the congenital disease (Chiang et al., 2014; Riley et al., 2011). The educational programs are also shown to decrease anxiety and overall emotional distress in patients and caregivers (Rempel et al., 2012).

Evidenced based practice suggests that the evidence presented in these studies and patient reports, and the attempted implementation in some facilities during the studies, can provide the

appropriate method to discovering a solution to a problem. It is the best practice for the nursing community to emphasize the importance of nurse-led intervention transition education, especially in the adolescent phases of life, through academia and nurse training.

Conclusion

Due to recent medical advancements, the population of survivors of congenital heart disease is increasing and currently includes many adolescents who are transitioning into the adult phase of life. These adolescents are learning how to take care of themselves, and the education distribution is absent in the community. The results of this literature review suggest that nurse-led intervention transition education is the best practice to equip the patients with knowledge of their condition, and to provide a higher quality of life for those with congenital heart disease (Chiang et al., 2014; Mackie et al., 2014; Rempel, Ravindran, Rogers, & Evans, 2012; Riley et al., 2011; Wilson & Chando, 2014; Yang, Chen, Wang, Gau, & Moons, 2013). In order to obtain more conclusive research, more studies should be completed in the United States, where health is a great concern. If the United States focused on nurse-led education in the hospitals and clinics, patients would experience a healthier lifestyle and exhibit measures in order to prevent readmission.

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Infantilization: Historical Attitudes of Doctors Toward Female Patients

Sylvia Hayes

Throughout history, male doctors have treated female patients with stereotypically paternalistic attitudes, leading to infantilization and a lack of autonomy for female patients; however, doctors' attitudes have gradually shifted to show greater respect for female patients and their autonomy. Roddy Doyle's *The Woman Who Walked Into Doors*, Sigmund Freud's *Dora*, Charlotte Perkins Gilman's "The Yellow Wallpaper," and Ernest Hemingway's "Indian Camp" demonstrate prime examples of historical paternalism in medicine. Dorothy Allison's *Bastard Out of Carolina* and Anton Chekhov's "A Doctor's Visit" show transitioning attitudes toward female patients. An example of a more respectful demeanor toward a female patient emerges in Margaret Edson's *W;t*, although even the doctors in *W;t* show only intellectual respect and not an empathetic understanding for their female patient.

One prime example of infantilization by healthcare providers toward women has been in cases of intimate partner violence (IPV). In *The Woman Who Walked Into Doors*, Roddy Doyle creates an environment in which the reader clearly sees the injustice of the doctors' treatment of Paula. Throughout the novel, the healthcare providers refuse to acknowledge Paula's abuse: "The doctor never looked at me... Drink, he said to himself" (Doyle, 164). The doctors in the story justify ignoring the abuse by focusing instead on Paula's alcoholism: "I was to blame. *Have you had a drink, Mrs. Spencer?*" (Doyle, 171). Paula's case is not a singular instance. Doctors have methodically ignored abuse for decades. Cultural norms of abuse toward women and fraternizing between

male doctors and abusive husbands enabled this behavior to continue. For example, in Paula's story, Charlo consistently joked with doctors about her running into doors. He belittled Paula after grossly abusing her, destroying her self-esteem and ability to advocate for herself. Paula decries, "You'd have felt sorry for him that night, being stuck with me. A drunken bitch who kept falling down the stairs and walking into doors" (Doyle, 200). The doctors in the story played along with Charlo's lies and left Paula feeling isolated and victimized despite their awareness of the abuse. Overall, the doctors missed an opportunity to advocate for Paula because of their fraternization with Charlo.

Recent Studies regarding IPV suggest that "advocacy may contribute to reducing abuse, empowering women to improve their situation" (Rivas, et al., 2015, p. 1). Rivas and fellow researchers completed a meta-analysis of studies investigating the effects of advocacy on IPV. The study suggested women "identify healthcare professionals as potential sources of non-judgmental, non-directive support, as long as they demonstrate an appreciation for the complexity of intimate partner abuse" (Rivas, et al., 2015, p. 10). Whereas historical attitudes stemming from sexism and fraternization with husbands may have prevented doctors from addressing IPV, modern challenges to helping women affected by IPV include "individual service providers' attitudes... insufficient staff training, lack of inclusion of violence-response training in national medical curricula, no clear policies on IPV, and lack of coordination among various actors and departments involved in planning integrated services" (Colombini, Mayhew, & Watts, 2008). With proper education and training, the prevalence of IPV could decrease as victims find non-judgmental assistance from healthcare providers.

Closely related to intimate partner violence, child abuse has also been historically ignored by doctors. In fact, even as attitudes toward child abuse have changed, doctors have often done little

more than question the presenting parent or child about the abuse, sometimes belittling them in the process by misunderstanding the complexity of the circumstances. In Dorothy Allison's *Bastard Out of Carolina*, this situation arises. In the novel, Bone's stepfather, Glen, physically, emotionally, and sexually abuses Bone throughout her childhood. While the doctor in the story asks questions about what causes Bone's repeated injuries, he does not actually help Bone. The young intern in the story indignantly questions, "what have you been hitting this child with? Or have you just been throwing her up against the wall?" (Allison, 113). The aggressive and confrontational approach the intern takes does not make a difference for Bone. In fact, in alienating her and her mother with angry speech, the doctor ultimately shows her a lack of respect. Furthermore, the doctor in the story talks down to Bone's mother. When the doctor originally asks how Bone broke her coccyx, the medical term confuses her mother. Instead of politely explaining, the young doctor talks down to her, saying "her tailbone, lady, her ass" (Allison, 113). This rudeness does nothing to make Bone's mother agreeable and alienates her and Bone as patients. Overall, changing attitudes toward child abuse have increased acknowledgement of its presence in medical cases; however, disrespect toward victims continues, ultimately limiting the ability of doctors to provide meaningful assistance to victims and their mothers. As Edmund Burke said, "the only thing necessary for the triumph of evil is for good men to do nothing." This often embodies the circumstances of child abuse cases.

The history of hysteria diagnosis and treatment presents another instance in which women have traditionally been infantilized in medicine. The diagnosis of hysteria first arose in ancient Greece, where Hippocrates named the disease after the female's uterus, which he believed caused the disease. The history of hysteria lends itself particularly well to paternalism. The diagnosis enabled male doctors to diagnose female patients with

psychosis for any excess of emotion. Notably, the disease was treated with bloodletting, beatings, diets, exercise, and more. The treatment of hysteria presented an opportunity for female patients to establish themselves, to share their perspectives, and to change the course of treatment for their disease. Fortunately, the intellect and perspective of female patients did play a major role in the development of new treatments for hysteria: “A scrutiny of this exchange of ideas suggests that female patients were not simply oppressed and silenced by male practitioners; rather, their collective voice, intellect, and expertise helped to form progressive treatments for eighteenth-century hysteria” (Meek, 2013). Today, the term hysteria refers to conversion disorder, in which a patient displays “neurological manifestations of underlying psychological conflicts” (LaFrance, 2014). Modern science has established that this illness does not arise from the uterus and does not exclusively present in female patients. Sigmund Freud played a major role in the development of our understanding of hysteria by attributing it to underlying psychological conflicts. The problem with Freud’s analysis, however, stemmed from his approach: paternalistic and victim blaming.

Freud, despite his obvious intellect, epitomizes paternalism and the infantilization of a female patient in *Dora*. First, Freud repeatedly discredits Dora’s perception of her own life. As a middle-aged man, Freud continually tells Dora, a teenage female, how she should interpret her experiences, dreams, emotions, and symptoms. The treatment gives Dora the message that she needs a man to tell her how to process her life and experiences. For Dora, a girl with a background of emotionally manipulative men, Freud becomes another man telling her what to do and how to think -- paternalism at its finest. Another problem with Freud’s approach to Dora stems from him over-sexualizing her dreams and thoughts. Dora, a young girl dealing with a manipulative father and trying to avoid sex with a middle-aged man, does not need to be blamed for being sexualized.

Instead, Dora would benefit from validation of the wrongness of her experiences and affirmation of her decisions. When Dora comes in with gastric pains, Freud accuses her, saying, “Whom are you copying now?” (Freud, 31). Freud even goes so far as to speculate that Dora sexually desires him: “the idea probably occurred to her that one day during a sitting that she would like to have a kiss from me” (Freud, 66). Fortunately, Dora finally takes her life into her own hands and leaves Freud’s care. By treating Dora as a child needing his guidance to overcome her psychological illness, Freud infantilizes Dora and oversexualizes her in an uncomfortable way.

Charlotte Perkins Gilman’s “The Yellow Wallpaper” provides another look at medical paternalism at the turn of the 20th century. The narrator of the story, a young woman struggling with post-partum depression, becomes increasingly psychotic while trapped in a room with yellow wallpaper. The attitudes of her husband and doctor increase her isolation and depression. From early in the story, her husband John refuses to allow her to move rooms or renovate the house despite her obvious discomfort, telling her, “really, dear, I don’t care to renovate the house” (Gilman, 3). The narrator feels increasing isolation and resentment toward John as the story progresses and his infantilization of her becomes increasingly apparent as he calls her “little girl” and “darling.” He further demeans her illness, saying “Bless her little heart!... she shall be as sick as she pleases” (Gilman, 6). He calls her concern about her own mental illness “a false and foolish fancy” (Gilman 7). After this point, the narrator quickly spirals out of control. In the story’s catharsis, she rips off the wallpaper and tells John, “I’ve got out at last... in spite of you and Jane. I’ve pulled off most of the paper, so you can’t put me back!” (Gilman, 11). Having developed postpartum psychosis in the wake of her isolation, the narrator manages to psychologically free herself from her husband’s control by tearing off the wallpaper. “The Yellow Wallpaper” provides an excellent example of the negative effects of paternalism in medicine

when it infantilizes a female patient and deprives her of her autonomy.

“A Doctor’s Visit” by Anton Chekhov presents a case of paternalism that gives way to more humanity. At the start of the story, Dr. Korolyov regards all three of the women in the household he visits with contempt. He describes Madame Lyalikov as “a simple uneducated woman” (Chekhov), saying she “fluttered” and “did not dare” to hold out her hand to him. This demeaning depiction sets the sexist tone of the story. When the doctor reaches the “invalid,” he believes her to be “ugly like her mother” and states that people “cared for her out of charity.” The doctor examines the patient and tells her “your nerves must have been playing pranks a little, but that’s so common” (Chekhov), shrugging off her symptoms. This attitude characterizes the doctor’s assumption that the girl has no real illness. After Korolyov explores the factory at night, he returns to the girl with newfound empathy. Having seen her world and having experienced some of the daily events that she experiences, Korolyov realizes that the root of the girl’s illness may be related to the grueling and dehumanizing factory environment in which she lives. He begins to feel compassion toward her. As they talk, she claims, “everything here worries me... I hear sympathy in your voice; it seemed to me as soon as I saw you that I could tell you all about it” (Chekhov). In this moment, Liza calls on her doctor to be a confidant. Liza expresses that “It seems to me that I have no illness, but that I am weary and frightened... I should like to talk, not with a doctor, but with some intimate friend who would understand me and would convince me that I was right or wrong” (Chekhov). Dr. Korolyov addresses Liza’s dissatisfaction and he suggests to her that “There are lots of places a good intelligent person can go to” (Chekhov). In acknowledging Liza’s basis for discontent and by respecting her autonomy, Dr. Korolyov breaks free from his previous attitude of contempt and embodies a respectful physician.

Ernest Hemingway, a relatively more contemporary author, also seems to struggle with negativity toward women in his short story “Indian Camp.” Although the doctor in the story generously comes to the Indian camp to help a woman with a difficult childbirth, he proceeds to ignore her almost completely. In the story, the doctor expresses, “her screams are not important. I don’t hear them because they are not important” (Hemingway as cited in Reynolds and Stone, 2001). Although the surgeon may be primarily focused on his procedure, he seems to view the woman as less than human.

Throughout history, doctors’ attitudes have generally changed to be more respectful and less paternalistic regarding female patients; however, this evolution has often been nuanced and incomplete. For example, *W;t*, by Margaret Edson, shows doctors holding a female patient’s intellect in high esteem but also demonstrates the doctors showing a lack of respect for her humanity. Vivian represents a privileged female patient, both socially and intellectually. Perhaps her advantage in society earns her the respect of the doctors. Regardless, the doctors in *W;t* validate Vivian. When Dr. Kelekian initially informs Vivian about her cancer, he fraternizes with her about difficulties with students. Vivian claims, “I always tell my students, but they are constitutionally averse to painstaking work” (Edson, 10) and Dr. Kelekian proceeds to agree and empathize. After this encounter, Vivian seems more comfortable with the doctor because he has acknowledged her expertise. He later reaffirms this when he asks her “Why do we waste our time, Dr. Bearing” (Edson, 39) referring to his interns’ ineptness. Dr. Posner, or Jason, also validates and respects Vivian’s intelligence throughout the story. He admits to taking her class on a challenge to get an A in the three hardest classes on campus. In fact, he states, “it was a very difficult course” (Edson, 22). Jason later states, “I had a lot of respect for her, which is more than I can say for the entire biochemistry department” (Edson, 74). Vivian,

although she struggles in the face of death, experiences a substantial degree of intellectual respect as a patient; however, her humanity does not receive the same respect.

Both Dr. Kelekian and Dr. Posner in *W;t* show a notable disrespect for Vivian as a dying patient. Dr. Kelekian, for example, enrolls her in a dubious clinical trial with questionable informed consent. He does not explain to her the likelihood of her death, even with the treatment, and he keeps her on a full dose of the treatment regardless of the debilitating side effects. As an intellectual being, Dr. Kelekian respects Vivian, but he does not respect her humanity. In the story, the doctors avoid discussing Vivian's severe symptoms in human terms, preferring only a clinical acknowledgment. They do not even talk directly to Vivian to acknowledge her suffering. Perhaps most egregious, Dr. Posner calls a code blue on Vivian when she dies even though she decided to be DNR. This blatant disrespect of Vivian's own choices shows a modern form of discrimination. By not informing Vivian about the details of their clinical trial, ignoring her suffering during treatment, and trying to resuscitate her after death, Dr. Kelekian and Dr. Posner join the line of male doctors who have failed to respect a female patient's autonomy and to show her respect.

Perhaps the way the doctors treat Vivian in *W;t* can be described in the words of Anatole Broyard. In his essay "Doctor, Talk to Me," Broyard expresses his need as a patient for his expertise to be validated: "While he inevitably feels superior to me because he is the doctor and I am the patient, I'd like him to know that I feel superior to him too, that he is my patient and I have my diagnosis of him. There should be a place where our respective superiorities could meet and frolic together" (Broyard). Broyard asks that doctors give up some of their authority in exchange for their humanity. Dr. Kelekian and Dr. Posner attempt to give up some of their authority and respect their patient's expertise in *W;t*. They glorify Vivian's intelligence and academic prowess. Unfortunately, they do not defer

to their humanity and treat Vivian humanely, leading to her isolation and lack of autonomy.

Modern attitudes in medicine toward female patients show some significant changes; however, some of the old patriarchal attitudes remain. A 1999 study aimed at investigating this concern examined the attitudes of medical school students toward women: “Both within and outside the medical establishment many have expressed concern that physicians stereotype women, wish to control decision-making of female patients, ‘pathologize’ their normal bodily functions, are oblivious to diversity issues or treat women as abnormal because they are not men” (Phillips & Ferguson, 1999). In their study, Phillips and Ferguson surveyed 241 medical students over several years to investigate changes in attitudes of doctors toward female patients. Their results suggested more recent medical students do not subscribe to sex-role stereotypes and feel “neutral about assuming control over female patients’ decision-making” (Phillips & Ferguson, 1999). The changes in physician attitudes, however, are not widespread. A 2003 study investigating physicians at a Norwegian university hospital found that practitioners commonly expressed that “we would rather work in a ward with only men or only women. Cause when you compare, the female patients are more difficult or demanding” (Foss & Sundby, 2003). These attitudes were shared by female physicians as well, one expressing, “It is incredible how women will talk about non-essential things and so use up time” (Foss & Sundby, 2003). Physicians and nurses in the study all responded with clear cut differences in perceptions of male and female patients, shining a negative light on female patients. As healthcare continues to evolve and grow, physicians must learn to understand the differences between male and female patients and treat all patients with autonomy and respect.

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The Effects of Musical Education on Students with Disabilities

Valerie L. Gose

Abstract

Students with disabilities are often pushed to participate fully in their core subject classes, but often are not provided adequate opportunity to be as engaged in the arts. This comes primarily as a result of inadequate pre-service training in teachers (Frankel, 2004) and insufficient knowledge of the child and his/her needs (Valentine et al., 2010), (Mackenzie, Cologon, Fenech, 2016). Yet, once these barriers are overcome, several changes can be seen in student development. Dexterity is built through the consistent training of motor functions related to performing, and students develop multi-sensory neural connections that include connections to listening skills, verbal and non-verbal communication, and increased focus and memorization abilities (Zatorre et. Al., 2007; Miendlarzewska, Trost, 2013). This improvement is made evident by imaging technology such as EEGs and fMRIs. Musicians, whether disabled or not, tend to show more active brain function than non-musicians (Constantin, 2015). Music education can also improve emotional understanding in students. This can be seen in studies like one produced at Edith Cowan University, which concluded that exposure to music may provide a pathway to advanced artwork at an earlier developmental level than previously considered (Riddoch, Waugh, 2003). Similarly, researchers at Bethel College in Kansas used the recently developed Geneva Emotional Music Scale (GEMS) to reduce the elicited musical emotions into nine emotions, which can not only be brought on by musical interaction, but can also be sought out (Anderson, et. Al, 2011). Adopting a social-relational understanding of disabilities

clears the way for improved socialization with others. The very environment that creates emotional benefit in students with disabilities can also work to educate others on their behalf. This is why teachers must receive proper training and become comfortable with the idea of working with these students, because the craft of these teachers has the potential to positively change lives.

Effects of Musical Education on Students with Disabilities

For years, school administrations and teachers have attempted to identify ways in which students with disabilities can be included in public education classrooms. Often, the priority of both parties is to help the child grasp a better understanding of their core subjects, most often Science, Mathematics, English, and History. Little focus is geared toward involvement in the arts, simply because it requires a greater expenditure of effort on the part of the faculty, the parents, and the student. However, many studies have shown that participation in music and art helps develop essential co-curricular connections within the child's education, and also helps to increase self-esteem, emotional awareness, independence, focus, dexterity, and interpersonal communication skills. Not only does music education benefit disabled students, but it also challenges the perceptions others have of their limitations. When the disabled student is a full, active participant in music and art classes, they often help bring a better understanding of their circumstances to their peers, teachers, and sometimes even to their parents. In music, there are numerous ways to engage each child uniquely and with a different set of goals per activity. Each activity serves not only to prepare the student for successfully playing a musical instrument, but to also lay the foundation for improving the way that they approach their other studies and a myriad of social situations. How can teachers adequately equip themselves and their classrooms for individualized education, and what are the potential outcomes of such a venture? Here we will discuss the method of understanding

that teachers must obtain in order to better suit their students' needs, as well as the behaviors and methods that will build the most effective program. Lastly we will examine the cultural and personal impact that music education has on students with disabilities and why it matters.

First it is important to be aware that even with extensive paraprofessional training, teachers and other faculty members will simply not always be properly trained on how to handle every single disability that may present itself in the classroom. Simply put, this is not the teacher's job. The teacher is obligated to maintain communication with the parents and paraprofessionals to create a program that is suitable for the student. The goal is to learn the strengths and weaknesses of the students on an individual basis and to set reasonable goals to achieve. It is also important to note that no two children are alike, and this includes those with disabilities. There are many different degrees of severity, and no two disabled students will be able to participate to the same extent that the other can. Therefore, it is absolutely crucial to discuss the practical limitations of each student with his or her parents and with his or her primary paraprofessionals in order to determine reasonable goals for the student in class.

With that in mind, there are certain steps that can be taken to promote inclusiveness within the music classroom upon evaluating the student's abilities. One such model of this type of environment can be seen in one of the six Autism-Specific Early Childhood Education and Care (ECEC) services provided by the Australian government. In these settings, it was noted that "Identified barriers to inclusive ECEC include inadequate pre-service training (Frankel, 2004); insufficient knowledge of the child and his/her needs (Valentine et al., 2010); directors who do not promote inclusive ECEC (Grace, Llewellyn, Wedgewood, French, and McConnell, 2008); and high child:staff ratios (Killoran, Tymon, and Frempong, 2007)" (Mackenzie, Cologon, Fenech, 2016). Using this

information, it is clear that teachers must take responsibility for obtaining at least minimal knowledge about the abilities and restrictions of disabled students, and then plot the environment and activities accordingly. In an article published in the Australian Journal of Early Childhood in June 2016, it is made clear that the understanding of a student's disability greatly influences the success a teacher has in educating the student. Three distinct models of understanding regarding disabilities are presented in the article, including the medical model, the social model, and the social-relational model. The medical model describes a disability as a negative physical or intellectual impairment. The social model describes a disability as the disadvantage wrought by non-accommodating environments and/or people, while the impairment is separately thought of as the actual limitations. The model described as the most effective and productive is the social-relational understanding in which there are three barriers to student development in society:

“Barriers to doing are socially imposed restrictions...barriers to being are words or behaviors that negatively impact one's sense of self and who they feel they can be...[and] impairment effects are the direct and unavoidable effects of living with ‘impairment’ has on an individual's ability to live in a social world” (Mackenzie, Cologon, Fenech, 2016).

This model encompasses an attitude of breaking down barriers, which is the ultimate goal of every teacher regardless of any limitations their students may possess. In order to do so, there are four key goals that the teacher must strive to achieve. The same article suggests that the ECEC success was based on those four components. The first is to modify the program to meet the child's needs, not the prescribed objectives that a “teacher-proof” curriculum may deem as an adequate education. The second is to view ALL children as unique and different, thus eliminating the “normal” and “uncommon” segregation that may occur due to

unfamiliarity and discomfort among students. Next, as always, teachers should never assume that they have accomplished their mission, but rather that they are continually fulfilling an important purpose in that child's life and investing in a well-rounded education. The fourth and final trait is the preliminary professional development that faculty should undergo so that everyone is well equipped to help the student succeed and so that everyone is aware of his or her goals within the classroom.

Next, one must understand that while music has its benefits to improving many types of limitations, music training alone is not going to "cure" a child (Miendlarzewska, Trost, 2013). However, the little victories are worth striving for, and thus we begin to examine the observed positive outcomes of such instruction, the first being the physical. Music, of course, requires many motor functions, including the ability to move fingers or mallets in time to the music, to distinguish and control pitch, and to take into account style markings, dynamics, and other written notation (Zatorre et al., 2007). Over time, this consistent training can result in the development of unique neural connections that can affect more than just musical ability. According to one research article, "long-term musical training influences functional brain connectivity even in research designs where no task is given, and points out that...musicians' motor and multi-sensory networks may be better trained to act jointly" (Miendlarzewska, Trost, 2013). Included in this sensory network are connections to listening skills, verbal and non-verbal communication, and increased focus and memorization abilities. The entire brain can be seen coming alive under imaging technology such as electro-encephalography (EEG) and functional magnetic resonance imaging (fMRI). Each hemisphere of the brain has been proven to control different developmental traits. The right hemisphere dominates emotional responses and sensitivity, and the left hemisphere is the control center for communication and analytical thought, including the ability to decipher languages and

decode mathematics. In musicians, both sides produce more observable activity than in non-musical students (Constantin, 2015). In a study produced at the Edith Cowan University in Western Australia, different genres of music were used in correlation with an arts program in which twelve students with severe intellectual disabilities were exposed to different types of music while examining successful artwork, such as a Kandinsky print. When exposed to classical music during the analysis of the painting, the students were able to pinpoint and even replicate the brush strokes and quality of art techniques used in the painting. (Riddoch, Waugh, 2003). The study concluded that exposure to the music was able to provide a pathway to advanced artwork at an earlier age or developmental level than previously considered. This then raises a new question. If musical influence was able to successfully raise the quality of art education for these students, why wouldn't this be the case for studies in the STEM subjects within the educational system? When difficult subjects are related to topics in which students hold particular interest, there is always a higher level of comprehension than in students who see each course load as a separate entity.

Next, the most commonly observed effect of musical education on students with disabilities is the emotional aspects that accompany musical expression. Every single person has determined for themselves genres and artists they prefer over others. In students with developmental or intellectual delays in which emotion is an abstract concept to grasp, music can be a way of experiencing emotion without understanding it. However, through the study of music, students can begin to associate different keys and modes with different emotions. As they master the concept of expressing emotion via an instrument, the comprehension of emotional self-expression can become more clear. In a study by Amber Anderson and Miriam Weaverdyck at Bethel College in Kansas, researchers used the recently developed Geneva Emotional Music Scale

(GEMS) to reduce the elicited musical emotions into nine dimensions: activation, inspiration, tenderness, nostalgia, peacefulness, power, tension, wonder, and sadness. It was determined by University of Kansas researchers that not only can these emotions be brought on by musical interaction, but they can even be sought out (Anderson et al., 2011). When students study music, they can begin to not only understand emotion, but to also turn to music to conjure up different emotions and express them in unique ways.

Perhaps the most crucial aspect of music education is the social interaction that is encouraged through playing alongside other musicians within an ensemble. With improved communication comes more confidence in social situations, but in a society in which disabilities are still not understood, this change is not made quickly. In a small ensemble setting, this type of social development begins with the simple task of playing a piece of repertoire as a band or orchestra. Awareness of different musical features and instrumentation also brings with it an awareness of the players behind the score, and through daily recognition and acknowledgement of the role that others play in the piece, a natural community is formed. When all of the students are gathered to accomplish the same goals and to play the same music, eventually the segregation dissipates and the perception of the disabled student's limitations can fade away from the minds of other students. On a grander scale, if more priority is placed on the inclusive integration of disabled students into musical programs, there would be generations of students growing into adults with a fuller comprehension of what a disability is and how it does not define their peers. Through this, social norms can begin to shift. More people would begin to recognize what these students have to offer and that they can accomplish just as much as anyone else. Perhaps it was best said in an article in *Psychology of Music*: "Through its cognitive, emotional and social functions, music is an

essential vehicle through which cultural heritage is passed from one generation on to the next” (Hargreaves, North, 1999). This is what music does. It expands boundaries through its performance or its message, and it generates compassionate responses from its listeners. In short, the very trait that creates emotional benefit in students with disabilities can also work to educate others on their behalf.

Moreover, the benefits that can be reaped by mildly to moderately disabled students in an inclusive classroom environment have prompted the use of music as therapy for those with more severe disabilities. According to an article by Jennifer Stephenson of Macquarie University, “Music therapy has been broadly defined by a music therapist with an interest in people with disabilities as ‘...therapeutic tool for restoration, maintenance, and improvement of psychological, mental, and physiological health and for the habilitation, rehabilitation, and maintenance of behavioral, developmental, physical, and social skills- all within the context of a client-therapist relationship’ (Boxill, 1985),” (Stephenson, 2006).

Clearly, the evidence of the importance of music education in regards to health has gained at least enough traction to promote the use of music therapy in addition to traditional clinical and occupational therapies. Within these music therapy sessions, it can be seen that there are extensive goals of helping to improve an individual’s development. The Australian Journal of Music Therapy lists these goals as “fulfilling the child’s basic needs...developing the child’s sense of self...establishing or re-establishing interpersonal relationships...developing specific skills...dispelling pathological behavior...[and] developing an awareness and sensitivity to the beauty of music” (Meadowes, 1997). Although this type of therapy is extensive, long-term, and definitely above the average public school teacher’s pay grade, it is incredibly noteworthy that the very subject they teach -- whether for

enjoyment, a paycheck, or to influence on the next generation -- is a subject that is helping so many people thrive.

It must follow then that efforts should be exerted to protect the existing musical education programs across the country, but also that it is essential to continue building new programs and modifying current curriculum to be inclusive and beneficial to all of the students who are enrolled in school. The United Nations Convention on the Rights of Persons with Disabilities declared in 2006 that all of these persons have the right to “full and effective participation in society...accessibility... [and] fostering at all levels of the education system, including in all children from an early age, an attitude of respect for the rights of persons with disabilities” (UN, 2006). These are the fundamental rights of those with disabilities, delays, or limitations, and music programs are just one of the many tools in which these rights can be protected. There is such a need for teachers to be properly trained for educating their students in this manner that many undergraduate programs designed for teacher preparation are now requiring service learning campaigns in which undergraduates have the opportunity to teach in a real world setting, including in special needs classrooms. In a study performed by Louisiana State University, the ways in which this service-learning impacted the undergraduates was researched. In the study, 18 university sophomores enrolled in music teacher preparation programs were interviewed about their experiences. The responses were almost exclusively positive. The participants stated that their understanding of disabilities had been shifted and that they felt more comfortable and prepared to handle teaching in those settings. The service-learning campaign also promoted creativity in designing lesson plans, a confirmation of career choice, self-reflective practice, a realistic understanding of truly successful teaching, increased empathy and awareness, and an appreciation of the small victories (Bartolome, 2013). With each challenge comes the knowledge that the students will succeed in time, and making sure that they are

given the proper tools to achieve is not only important, but the very foundation upon which teaching professions are built.

In conclusion, students with disabilities should be seen as equally active members of a music program. Integrative learning is by far the most effective way through which people learn, and the abilities and limitations of an individual should not hinder his or her opportunity to learn alongside others. Emil Durkheim, a renowned sociologist, once stated that group learning was essential to student education. His exact words are, "A class, indeed, is a small society, and it must not be conducted as though it were only a simple agglomeration of subjects independent of one another. Children in class think, feel, and behave otherwise when they are alone." When students begin to feel like they are part of a musical community, they begin to grow in ways that affect their personalities, academics, emotional and social awareness, and even in the way they view their own impairments. These impairments, too often seen as negative and unfortunate, should be seen as nothing more than a challenge that can be overcome. Music has proven itself time and time again by conquering personal and social hurdles. Ludwig van Beethoven, the famous German composer, began losing his hearing at age twenty-six and was completely deaf by the time he wrote his famous Ninth Symphony. Ray Charles, an accomplished American pianist, was blind since birth. Jacqueline du Pré was an English cellist who suffered from multiple sclerosis. The Def Leppard drummer Rick Allen continued his career even after an automobile accident resulted in the amputation of his arm. Cameron Lasley, better known as Laz-D, is an American rapper who was born with Down Syndrome. Matt Savage is an American musician diagnosed with Autism who has been building a professional jazz career since the age of ten. These are just a few of the people who overcame their impairments and challenged social norms through music, and by their example and through a proper education, others can begin to do the same.

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The Dangers of Reading Modern Assumptions into 1 Samuel 1

Tammy Phillips

In *What They Don't Tell You: A Survivor's Guide to Biblical Studies*, Michael Joseph Brown emphasizes the importance of considering context when reading the Bible. In particular, Brown lists his “Rule of Thumb #2” as, “Be careful not to read your modern assumptions into ancient texts” (Brown 44). This advice is especially useful when studying 1 Samuel 1 of the Hebrew Bible. From the idea of polygamy to animal sacrifice, the cultural practices described in 1 Samuel 1 are very different from those of today’s society. However, there are also striking similarities between the struggles that the characters in this chapter face and those that modern readers may experience, such as strife within the family as well as feelings of jealousy and insecurity. As a whole, these differences and similarities between our cultural context and the context of 1 Samuel 1 alter the meaning of the passage both positively and negatively for today’s Bible readers.

Firstly, one “modern assumption” that contemporary Bible readers might be inclined to read into this chapter is that individuals are separate entities from their families. Verse 1 of this chapter indicates the opposite belief: “There was a certain man of Ramathaim, a Zuphite from the hill country of Ephraim, whose name was Elkanah son of Jeroham son of Elihu son of Tohu son of Zuph, an Ephraimite” (1 Samuel 1:1). Initially, I skimmed over this sentence because in my opinion, one’s lineage or place of birth is not of much importance. Upon further inspection, I see now that such a thorough description of the family that Elkanah came from is

a reflection of the importance of male children during that time period. Without remaining conscious of this idea, modern readers could easily dismiss the problems that arise for women who are unable to bear sons. This concept is further exemplified as the chapter progresses.

Another assumption that contemporary Bible readers might bring to their reading of this chapter is the idea that one man and one woman are supposed to enter a marriage together, not one man with multiple women. Polygamy has a long history of practice in many cultures but has faded from most developed countries. In various Bible passages, however, polygamy is widely accepted and even encouraged. For example, in verse 2 we are first introduced to Elkanah's wives: "The name of the one was Hannah, and the name of the other Peninnah" (1 Samuel 1:2). This could have been unintentional, but perhaps listing Hannah's name before Peninnah's was symbolic of Elkanah's preference of Hannah over Peninnah. Further, calling Hannah "the one" and Peninnah "the other" might have been included to accomplish this same goal.

Interestingly, although Hannah is barren, Elkanah favors her almost invariably over Peninnah: "[Elkanah] would give portions to his wife Peninnah...but to Hannah he gave a double portion, because he loved her, though the Lord closed her womb" (1 Samuel 1:4). Given this information, I find it fascinating that in Hebrew, the name Hannah is translated to mean "favor" or "grace" ("Channah"). No way is this a coincidence! Never in the entirety of the passage is there a mention of Elkanah loving Peninnah in the way he loves Hannah. This favoritism leads to a great deal of jealousy and animosity between the two wives, which is why Peninnah is frequently called "the rival" throughout the passage, provoking and irritating Hannah because of her infertility (1 Samuel 1:6). Hannah envied Peninnah because she could bear children, while Peninnah envied Hannah because she had the heart of Elkanah. However,

Bible readers risk missing the role of Elkanah in this passage if they focus on this rivalry.

According to modern assumptions, Elkanah would be considered an admirable husband. After all, he remains faithful to someone who cannot give him what his society values most about women: the ability to bear a male child. Moreover, he stays with Hannah for little more reason than simply his “love” for her. As a contemporary Bible reader, my inclination is to believe that Elkanah already gets what he needs societally from Peninnah (i.e., sons) but gets what he wants personally from Hannah (i.e., companionship). For that reason, perhaps Elkanah does not shun Hannah for her barrenness because she fulfills him in other ways. I cannot help but notice the fact that Elkanah ignores Peninnah’s bullying of Hannah though: “Her husband Elkanah said to her, ‘Hannah, why do you weep...Am I not more to you than ten sons?’” (1 Samuel 1:8). Elkanah seems to recognize Hannah’s feeling of inadequacy yet does nothing to defend her against the main person depressing her, which is Peninnah. Perhaps this is because Elkanah undervalues Hannah more than this passage conveys and he recognizes that she is a social pariah.

One more modern assumption that some Bible readers may have is that animal sacrifice is sinful and senseless. Quite the contrary, in ancient times animal sacrifice was a way to worship the Lord and was often demanded in the Bible as an appropriate action. In this particular chapter, Elkanah and all of his household would offer a yearly sacrifice to the Lord (1 Samuel 1:21). After Peninnah had taunted Hannah to the point of crying out desperately to the Lord for a son, Hannah finally conceived a child and named him Samuel (1 Samuel 1:20). It is important to note that Samuel means “God has heard” in Hebrew (“Shemuwel”). Indeed, Hannah viewed the birth of Samuel as a long-awaited answer to her prayers. As a token of her appreciation, Hannah sacrifices an animal in the name of the Lord: “Then they slaughtered the bull” (1 Samuel 1:25).

Lastly, contemporary Bible readers might find it difficult to comprehend why Hannah would pray for a son only to offer him to the Lord. It seems a little backwards to me to wish so badly for a son only to promise to “set him before [God] as a nazirite until the day of his death” (1 Samuel 1:11). Why beg for a son if one cannot ultimately keep him? We see in the final verse that Hannah gives up her only son in order to fulfill her vow: “Therefore I have lent him to the Lord; as long as he lives, he is given to the Lord” (1 Samuel 1:28). My modern assumptions get in the way of understanding Hannah’s desperation to bear a son. I can see, though, how in ancient times such practices would be common or at least understandable.

This first chapter of 1 Samuel highlights many different cultural practices that pervaded the biblical times. If Bible readers are not careful, they can misinterpret the passage and discount Elkanah as a womanizer, Hannah as a sad woman who cannot have kids, and Peninnah as a bully. By taking heed of Brown’s “Rule of Thumb #2,” readers can gain a deeper understanding of the passage and its characters. This is not a story about animal cruelty or jealous wives; this is a story about a once powerless woman benefitting from divine favor. Remaining conscious of our modern assumptions can allow contemporary Bible readers to avoid missing the forest for the trees.

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Garlic and Heart Health

Madison Snow

The body system in question is the cardiovascular system which is composed of the heart and blood vessels. It is responsible for pumping blood throughout the body so that nutrients, oxygen, and hormones can be delivered to the cells and metabolic wastes can be removed. Garlic is a vegetable used in the food of many cultures as well as in homeopathic medicine. The claim being made is that garlic consumption increases general heart health and decreases the chances of various heart-related diseases. With the consideration of several scientific articles, it can be inferred that this health claim is in fact true, but only within certain limits.

In a literature review by Kevin E. Ritzenhaler, D.C., the prevention and treatment of heart disease is considered with the effects of non-pharmaceutical approaches. Specifically, he considered how nutritional and lifestyle changes affected heart function. One of the nutritional changes was increasing garlic consumption through supplements, which was found to reduce cholesterol levels and restore arterial blood pressure. There is no concrete evidence to support the precise mechanism behind garlic lowering cholesterol; however, it is presumed that allium, a major component of garlic, is responsible. This is discussed in a journal article titled *Garlic – The Heart of the Matter*. While the specifics are not known, it is clear from several studies that garlic inhibits the function of two enzymes, human squalene monooxygenase and HMG-CoA reductase (Sobenin). These enzymes are responsible for the synthesis of cholesterol and fatty acids. By decreasing the activity of the enzymes, cholesterol levels are also decreased. The

reduction of cholesterol levels is important because it decreases plaque on arterial walls. In doing so, blood vessels are kept flexible and atherosclerosis is reduced. By keeping blood vessels flexible and clear of blockage, blood can flow freely without deterrence. This effectively lowers the risk of heart attack or stroke, allows nutrients and oxygen to be transported to cells, and stops metabolic waste build-up.

These findings came from various experiments in which groups of people were given either a garlic supplement or a placebo. The data collected from a number of these experiments has demonstrated that those who received the garlic supplement also experienced a decrease in cholesterol levels immediately following the trial (Stokes). However, the results were not found to extend for longer than six months. This could be due to discontinued intake of garlic or acclimatization to the increased garlic in the body. A problem with the execution of these experiments is that correlations between uncontrolled variables and the data have been found. Some of these variables that should be taken into consideration when designing further experiments are age, gender, initial cholesterol levels, genetic predisposition to an unhealthy heart, and how the garlic is being prepared for consumption (Rahman). These experimental problems and the unknowns associated with garlic indicate that its effects need to be explored further.

The claim that garlic is good for heart health can be accepted as true. However, further study needs to be done to determine the extent to which garlic is helpful. Garlic should be included in a well-balanced diet at normal intake levels; but, one should also exercise regularly, sleep for seven to nine hours each night, and manage stress wisely. Simply following one of these guidelines will not keep heart problems at bay, but maintaining a balanced lifestyle and practicing multiple good habits will certainly increase one's chances at having a healthy heart.

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Deconstructing *Citizen*: Interpreting the Dimensional Relations of Being Black in America

Patience Williams

I.

Claudia Rankine's *Citizen* explores daily encounters of racism that range from personal micro-aggressions to historical murders. She writes her concepts in a dreamlike language that might feel foreign to some, and familiar to others -- but she addresses the readers in second person, which includes everyone regardless of their perspective or background. In doing this, she makes each reader feel responsible for their knowledge of what contributes to the racial divide of America, and gives no space for defensiveness -- only a persistent feeling of tiredness that accompanies the reader until the very end of the book. "The exhaustion of the body and mind in a racist society is a central focus of *Citizen*," Angela Hume wrote (80).

Broken into seven parts, Rankine seams together a lyric that uproots themes of environmental decay in relations of black bodies and their evolvment, and transcends this feeling of exhaustion and timeless oppression from past to present. She wavers back and forth between the two using metaphor, nature, and historical reference. In an interview with the author, Nick Vagnoni writes that Rankine believes her format to be "curatorial -- a way of stepping into and dissecting cultural moments to access feeling in ways that newspaper or textbook accounts might not" (Vagnoni). Rankine herself says, "I'm only interested in the fact of it, because the fact of it accumulates to account for the feeling, and then the feeling leads me to the lyric" (Vagnoni).

The book's experimental format and strong, abstract language seems to strike the target of what it feels like to be a black person in America—what it feels like to be a citizen. The way she sets up the experience of her novel, presents literary representations of environmental decay in relations of black bodies, uses abstract language to articulate her realm of thought and experience, and incorporates multimedia images + video into her work demonstrates the masterful skills of Rankine to create a literary and visual masterpiece. As a means of interpreting her lyric, I have broken my essay into seven parts to match the lyric's format as well as to convey its fragmented impression upon me, and have decided to use second person and personal experience to further my discussion of why this text needs to remain talked about.

II.

The first time I read *Citizen*, I was curled up on the couch in my bedroom and felt as though my privacy had been invaded. Rankine's language brought forth the feeling of being black to the forefront of my chest, where the discomfort remained imprisoned and second-guessed and invalidated all too often—but it could not get free. Rankine wore me out in a way that made me feel like crying and that made me angry. She got so far, but she did not do what I wanted her to do. She displaced this feeling that I kept calm each day of my life so that when an emotional overflow happened, it worked its way up to my throat, but it did not release.

She gave me her energy, her oppression, and her language, but she failed. And yet, I think she failed in the best way that she could have. Is it possible to achieve a failure that becomes a high honor of success? William Faulkner, in an interview with the *Paris Review* in 1956, seems to believe so. "All of us failed to match our dream of perfection," he stated. "So I rate us on the basis of our splendid failure to do the impossible" (Faulker).

III.

Even though Rankine did not do what I wanted her to do, she did what needed to be done. I have never read a more immersive text that describes what it feels like to be a person of color in America, nor about how environmental surroundings reflect the ways in which we ourselves refuse to acknowledge its effect and relation to us. For example, the book begins with a passage regarding isolation and loneliness, and how the coinciding of the two makes room for acknowledging suppressed feeling:

When you are alone and too tired even to turn on any of your devices, you let yourself linger in a past stacked among your pillows. Usually you are nestled under blankets and the house is empty. Sometimes the moon is missing and beyond the windows the low, gray ceiling seems approachable. Its dark light dims in degrees depending on the density of clouds and you fall back into that which gets reconstructed as metaphor (Rankine 5).

Although the text presents itself as a block, thorough instructions are provided. Rankine infers that being too tired to turn on virtual devices means not wanting to communicate, to function in a virtual world. Whether planned or unplanned, venturing online tends to lead to social media. Scrolling through blogs and profiles means not knowing what will appear until it has already been seen, investing yourself in a vulnerable or defensive state when you see what you might like or not like. Regardless of your reaction, it causes a quick response—one perhaps unknown to you as you keep scrolling, as you keep micro-reacting. I have seen it happen with a friend scrolling through Instagram; each photo cast a different glow

of light in his eyes as he thumbed up each image, absorbing its content and adjusting the width of his eyes to the brightness of each. Sometimes the light in them rattled as he furrowed his brow or parted his mouth. However, the reaction disappeared just as quickly as the image, and his face readjusted for the next one all the same.

For Rankine, this stimulation will not do and reality cannot be avoided tonight; the mind cannot be transported by scrolling through social media until it grows tired. Tonight, it will grow weary on its own accord. “You let yourself linger in a past stacked among your pillows” assumes comfort while you sleep, and suggests support for the weight of your head. Perhaps this past is the reason why some people sleep with sweet dreams and safety while others sleep with anxiety and frustration on their minds. The stimulation granted by social media arrives in this quiet, but is not provided by anyone’s profile but your own. “Usually you are nestled under blankets and the house is empty.” This line draws attention to loneliness and isolation—seemingly both intentional, but while blankets give warmth, an empty house gives no signs of life besides the breaths inhaling and exhaling from your chest. The moon might not flood milky white light into your room tonight to show its alliance, to bear its witness upon you; the windows separate you from whatever frightens you outside of your own body. The ceiling seems approachable because it limits you. The density of clouds symbolizes your thoughts, your aspirations and how clearly you can see them that night; the rest of the sentence symbolizes metaphor, because it deals with the self in relations of atmosphere, of speculative thought that resonates in surrounding.

IV.

While Part One exemplifies personal accounts of discrimination, self-doubt, disbelief, and micro-aggressions, the next few sections of the book recall public accounts of racism on a larger scale. For example, Part Two begins with Hennessey

Youngman discussing how to sell one's "anger nigger exterior" for entertainment purposes, as well as for pay (Rankine 29). After this section comes the description of Serena Williams's encounters with racism on live international television. In this portion, Rankine incorporates more environmental elements that were lightly mentioned at the end of Part III of this essay:

Yes, and the body has memory. The physical carriage hauls more than its weight. The body is the threshold across which each objectionable call passes into consciousness—all the unintimidated, unblinking, and unflappable resilience does not erase the moments lived through, even as we are eternally stupid or everlastingly optimistic, so ready to be inside, among, a part of the games (Rankine 28).

Bodies become conditioned to societal norms and compose themselves according to how they feel they should be composed. The body meets the past in spirit, and composes itself in the present upon the memory of that moment. With this in mind, the memory of the body must be much deeper and go further back than the present. In her article titled "The Intergenerational Trauma of Slavery and its Aftermath," author Gilda Graff quotes another researcher who describes how the offspring of victims of slavery might still feel and experience the trauma of their ancestors:

There is little in slavery that is not traumatic: the loss of culture, home, kin, ...sense of self, the destruction of

families through sale of fathers, mothers and offspring, physical abuse, or even witnessing the castration of a fellow slave. Yet subjugation was its most heinous aspect, as it sought nothing less than annihilation of that which is uniquely human—the self (Gump 48).

Rankine's claim that the body has memory might understate the capacity in which that memory is felt and experienced; however, the way the mind perceives remains shaped by present societal norms. This might contribute to why the body (and mind) might not be able to understand why it feels offended or scared—might it be something existing within them that has lingered from the past to the present? The answer is possibly: "There is so much controversy and confusion about the degree of prejudice and discrimination that persists in our society. Seventy-five percent of African Americans believe they have fewer opportunities than whites, while almost sixty percent of whites think blacks have the same opportunities that they have" (Graff 188-189). This parallels with "-- all the unintimidated, unblinking, and unflappable resilience does not erase the moments lived through," because no validation is given to the one who experiences something so fleeting and yet so constant. The natural laws of existence claim that only the fittest survive, and while this might be true, it remains true on an instinctive level that has not been altered by the societal man and institutional systems. As for those who survive the presence of memory and the corruption of society, the optimism in which Rankine refers to must be met with resilience and hope. No matter how much this weight fractures the soul, it must continue to bear it all.

Along with this weight upon the body and this memory upon the mind comes the language that blurs into emotional abstraction and blends with historical significance. In one of her simpler paragraphs in Part Three regarding language and its impact upon people of color, she writes the following:

For so long you thought the ambition of racist language was to denigrate and erase you as a person. After considering Butler's remarks, you begin to understand yourself as rendered hypervisible in the face of such language acts. Language that feels hurtful is intended to exploit all the ways in which you are present. Your alertness, your openness, and your desire to engage actually demand your presence, your looking up, your talking back, and, as insane as it is, saying please (Rankine 49).

I do not know which is worse: not being acknowledged or not being seen. The language of this paragraph specifies that the hurtful comments that ring so poignantly and negatively in your ears are the comments that do not recognize your humanity and vulnerability as such: "Language that feels hurtful is intended to exploit all the ways in which you are present." This feels like a violation as well as trickery. What has evolved to normality seems like violence, but no one is certain of who really is the one conducting such dark magic. It does not seem like one group's fault—more so of a systematic failure and blindness where there should be knowledge and empathy. Nobel prize winner Toni Morrison believes "The systematic looting of language can be

recognized by the tendency of its users to forgo its nuanced, complex, mid-wifery properties for menace and subjugation. Oppressive language does more than represent violence; it is violence; does more than represent the limits of knowledge; it limits knowledge” (Morrison). With this in mind, attention should be drawn to a more abstract dimension of Rankine’s language. Below is an excerpt of Part Six’s section titled “December 4, 2006 / Jena Six:”

As he walked across grass still green from summer walking out of the rain a step beyond into a piece of dry sky all day for him in this moment a shelter as he sat beneath the overhanging branches of the “white tree” surprising himself at the center of the school yard thinking of the slight give in the cushions of the counter seats he had read about in textbooks did the hardness of the ground cross the hardness of the seats in buses as he waited to be noticed listening to the lift and fall of the leaves above him? (Rankine 99).

There is such a blur and transparency to the language and the setting and the content, but as it blurs it blends. “One of Rankine’s most pointed critiques...concerns the difficulty of relating to or identifying with one’s environment when one has been othered by the dominant white society and, consequently, forced to live with greater amounts of environmental risk” (Hume 80). One sentence compromises the straightforwardness of the message by fragmenting it, switching from place to sky to meaning to past. Clarity cannot be sought out because it no longer exists; extraction cannot be made because there has been a fading and dimming and brightening, and time enough for all of these elements to morph into

something else that it was not before. Although the history is apparent, it has not been taught as much as it can be felt. A ghostly presence lingers in the setting, a nostalgic and haunting emotion that accompanies this walk. This passage holds history, it holds fluctuations, and it lapses. Essentially, it is historical. It deals with the Jena Six, which names the 2006 incident of six black students in a Louisiana small town who brutally beat up a white student. Five of the six young men were trialed as adults for attempted murder. Although the charges were lessened over time, an uproar occurred after the trial because the charges were so harsh and reflected a larger systematic injustice against black men (NPR Staff). In Rankine's language, she equates the tree with hanging, which symbolizes another incident that happened hour months prior to the beating: "a black student asked if he could sit under a tree on campus or if it was reserved for whites. Three nooses hung from the tree the next day" (NPR Staff). Additionally, the seats symbolize boycotts from buses and in restaurants and the other demonstrations in history that sprung up from civil rights movements, such as this one. The shivering of the branches and leaves equate "strange fruit;" the nooses hanging from that tree memorialized the past events in history, recalling that same threat to the present to frighten a student: "Rankine's work figures not only the wasting of the body and the self, but also the wasting of the environments in which they are placed" (Hume 80). Overall, the remnants of racism are still alive and well, and we are *beneath it all, we are listening, we can feel its breath.*

VI.

Rankine's incorporation of historical reference and abstraction into her language demonstrates just one way she articulates her intentions. Another is through her usage of multimedia in her book and also within her website. "Citizen is a collage poem, one that intersperses prose poems, essays, and scripts

with images” (Hume 82). Initially, one can marvel at visual art or simply watch a film, and the interaction can stop right there -- but if one really recognizes the intention behind the work, or if someone decides to question what is going on, why this is the way that it is, well -- the intention and the impact has plunged deeper, hasn't it? The deeper one immerses oneself, the darker things get. Depth does not grant clarity, by any means. It can grant an understanding of the questions that have arisen and perhaps cannot be answered, but for this depth to exist, it has to be present in some medium or another. Rankine has decided to present these mediums visually.

In the ‘situations’ portion of her website, Video Two takes place on an airplane with the drowsy sound of a commercial flight playing in the background. If the people are not already asleep then they are falling asleep. If they are not fully asleep, (it can be difficult to sleep well on a plane), then their eyes are closed but their minds are wandering. As a man props his legs against the seat in front of him and the clouds are in view from the uncovered oval window, Rankine’s voice begins to speak:

... in the exhaustive calm that splits nothing from you, clouds, as they always seem. A sky, a moon, the grounds, touch—all evidence of the you, you hold within... (Rankine).

The man continues to rest while Rankine speaks, releasing the words as though they were floating upon air from her mouth, seeping into this sleepy state that succumbs the entire mood of the film. Similar to the beginning of the book, clouds are also mentioned here and allude to a society that grants validation in the *seeming* (prejudices that seem justifiable or not harmful), as well as a situation where what appears apparent to some remains invisible to others. “A sky, a moon, the grounds, touch—all evidence of the you,

you hold within...” collaborates with the visual representations Rankine scatters throughout her book. Again, you might attempt to decipher the reason for a photograph being placed in a certain section, or for being placed in the book at all. Others of you might decide to pay little attention to the artwork and just continue reading. Regardless of your decision, the photographs add content and context to the lyric, channeling color and texturizing depth to the pages.

In the last section (Part Seven), a mixed media piece named *Sleeping Heads* fills up the right page of a spread, and a poem mirrors it on the left. Both pieces convey an image: one verbally, one visually.

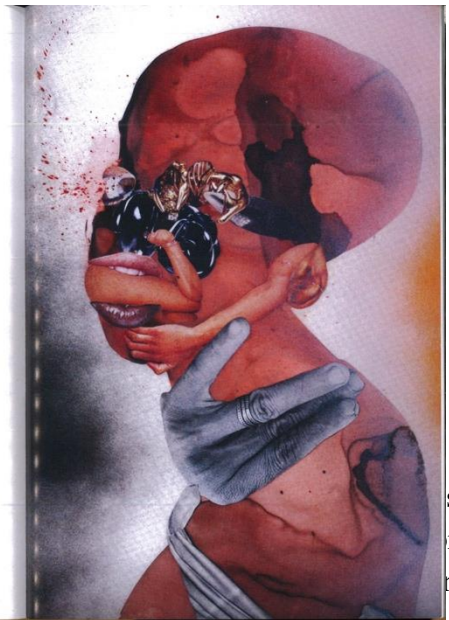
Everything shaded everything darkened everything
shadowed

is the stripped is the struck—

is the trace
is the aftertaste.

I they he she we you were too concluded yesterday to
know whatever was done could also be done, was also
done, was never done—

The worst injury is feeling you don't belong so much
to you—



middle and fleshiest portion of the poem ends abruptly with a dash -- it cuts off, like someone caught the poem by its throat.

Additionally, the ambiguity of the person(s) reflects the ambiguity of the sex: “The worst injury is feeling you don’t belong so much/ to you --” Another halt concludes the poem, leaving it to linger on by an infinitive. Key word: injury. The injury is what composes a humanlike image in the portrait: an arm rests upon the curve of the chin, a hand clasps around the neck, a leg catches in between lips. This ambiguity shows that the pronouns matter little, because all of the limbs of the image and lines of the poem fuse together to create something confusing but yet identifiable -- and yet, not what it might seem.

VII.

Since *Citizen* uses such abstract language and visual artwork to pinpoint the experience of being black in America, it has forced me to acknowledge that there is no specific definition, explanation, or expression to accurately encompass the black experience. When English was introduced to my ancestors with black skin, it was used to capture them and to work against them. This system has not changed—it remains in the undercurrent of mainstream American culture and within our laws, such as the thirteenth amendment. What Rankine accomplishes with her experience, relations, language, and multimedia contributes to the dialogue of the black experience and has validated the lives of countless people of color—as well as widened the perspective of non-minorities. She gives voice in this lyric, where she also grants a place to exist without fear of invisibility: “This is why our insistence on belonging, community, and human connection is one of the greatest acts of courage and resistance in the face of oppression -- for, in the words of the beloved Irish poet and philosopher John O’Donohue, ‘the ancient and eternal values of human life — truth, unity, goodness, justice, beauty, and love — are all statements of true belonging’” (Popova).

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Tanning Bed Immunity Investigation

Abbey Renner

Allison started tanning when she was 16 years old because she was convinced it made her prettier. During college, Allison started tanning once every two weeks, but eventually began going once a week due to the compliments she received on how tan she looked. Allison always joked that she was going to get skin cancer, but never actually thought it would happen to her. At age 22, Allison noticed a dark spot on her back and suffered through numerous treatments and procedures to have the spot removed.

Typically, when we think of tanning beds, we think of commercials featuring really tan buff guys at the beach and girls in bikinis. Maybe we think of tanning booths and tanning goggles or of sun tan lotion and sun burns. For many, they think of loved ones who have had skin cancer. However, what if there's more to tanning beds than these health issues and greasy advertisements? Researchers report that exposure to sunlight appears to activate T cells within the immune system so that they move more rapidly. Perhaps tanning beds are the key to boosting our immune systems.

The immune system is the body's defense against infectious organisms and other invaders. This system takes a series of steps to combat against foreign invaders. The immune system is made up of a network of cells, tissues, and organs that work together to protect the body. Some of the most important cells involved are called leukocytes, or white blood cells. White blood cells are responsible for seeking out and destroying disease-causing organisms or substances. There are two basic kinds of leukocytes: phagocytes and lymphocytes. For our investigation into the effects of tanning beds on the immune system, we will focus on a specific type of

lymphocyte -- the T lymphocyte. T cells are the specific cells responsible for destroying the body's invaders. But T cells can't do this alone. Like soldiers waiting on their commanding officer, T cells have to wait for orders to attack the invaders. This is where vitamin D from the sun comes into play. Researchers believe that this so-called sunshine vitamin, which can be obtained from food or manufactured by human skin exposed to the sun, plays a key role in boosting the immune system.

Scientists at the University of Copenhagen have discovered that vitamin D is crucial to activating our immune defenses, and that without sufficient intake of the vitamin, the T cells would not be able to react and fight off serious infections in the body (Alleyne). To detect and kill foreign pathogens, T cells must be triggered into action from inactive cells to killer cells. The researchers found that T cells rely on vitamin D in order to activate. Professor Carsten Geisler from the Department of International Health, Immunology and Microbiology, said, "When a T cell is exposed to a foreign pathogen, it extends a signaling device or 'antenna' known as a vitamin D receptor, with which it searches for vitamin D" (Alleyne). This basically means that T cells wouldn't be able to complete their job of attacking harmful invaders without activation by vitamin D. Other than its role in the function of T lymphocytes, vitamin D is also essential for maintaining normal blood levels of phosphorus and Calcium, which also aid in health.

Spending time in the sun can supply the body with vitamin D; but, when natural sunlight is hard to find, we might replace the time in the sun with time in a tanning bed. Both the sun and tanning booths send out two types of ultraviolet light rays: UVA and UVB. UVA rays have longer wavelengths that are able to reach the deepest layers of the skin. It is here that the pigment melanin is oxidized -- darkening the skin. UVB rays have shorter wavelengths and only penetrate the upper layers of the skin. However, while UVB rays are responsible for the synthesis of vitamin D, tanning salons tend to

avoid them because overexposure to UVB rays is what causes the skin to burn quickly. For this reason, tanning beds typically emit an overwhelming majority of UVA rays -- the ray responsible for the bronze-brown tan sought after by those who frequent tanning beds. Clearly, this maximizes the wanted effects of tanning beds by increasing tan and decreasing burning. Unfortunately, this decrease in UVB rays also minimizes the amount of Vitamin D synthesized.

Unless “healthy” tanning beds exist somewhere out there which limit radiation and emit UVB alongside UVA like the natural sun does, it seems that the claim that tanning beds aid in the function of the immune system is false. Although Vitamin D does play a role in boosting the immune system, the only way that tanning beds could aid in the immune system would be if they actually encouraged synthesis of vitamin D. Due to the risks of skin cancer caused by radiation, it would be wiser to tan in natural sunlight when seeking vitamin D rather than in a tanning bed. However, to just get tan, tanning beds will do the trick.

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Cranberry Juice as a Treatment for Urinary Tract Infections

Monica Storozyszyn

The urinary system is an impressive component of the human body. Textbook author Elaine Marieb likens it to a city's water purification plant (with the body's blood being the city's water). It filters the blood through the kidneys and eventually excretes toxins, metabolic wastes, and excess ions while returning other needed substances to the blood (Marieb & Hoehn, 2016). Our kidneys are made up of nephrons, which make this filtration process possible. Blood enters the glomerulus where the filtrate fluid is formed. That fluid then makes its way through the other components of the nephron (the proximal convoluted tubule, the nephron loop, and the distal convoluted tubule) where substances like water, ions, and minerals are reabsorbed and secreted into and out of the tubules (back into the bloodstream). What remains -- waste and extra fluid -- enters the collecting duct, where it moves into the ureters to the urinary bladder and then leaves the body through the urethra. Sometimes, however, the "plant" has issues clearing waste, such as bacteria like *Escherichia coli* (*E. coli*), which can lead to infections of the urethra, bladder, ureter, or kidneys. This is commonly referred to as a urinary tract infection (UTI) (NIDDK, 2017).

According to the Mayo Clinic, bladder and urethra infections are the most common types of UTI (Mayo Clinic, 2016). If left untreated, infections of the bladder or urethra can lead to more serious kidney infections. Women are more likely to develop bladder infections than men due to the shorter length of their urethra and the closer proximity of their urethra to their rectum

(NIDDK, 2017). The National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) cites research that indicates that 40-60 percent of women will develop a UTI, and that one in four women will have a repeat infection. The general course of treatment for a UTI is antibiotics, with the type differing depending on what type of infection it is, the severity of the infection, whether or not it is a repeat infection, and whether the patient has a problem with their urinary tract. The NIDDK recommends drinking a lot of “liquids” and urinating often to speed healing, and they also note that water is the best liquid to consume. Given the current concern about antibiotic resistance – in fact, the first *mcr-1* gene resistant to the last line antibiotic colistin found in the United States was isolated from a woman who had gone to seek treatment for a UTI (Kline, 2016) – it is no wonder that there is interest in utilizing natural remedies to treat UTIs without resorting to an antibiotic. However, given the current research available, the most popular home remedy – drinking copious amounts of cranberry juice – is not an effective method of treatment for a UTI.

In a recent editorial in the Journal of the American Medical Association (JAMA), cranberry juice was initially explored as an alternative treatment following the observation that it could lower the pH of urine. The author of the editorial, Dr. Lindsay Nicolle, wrote that cranberry juice lowering urine’s pH was “attributed to formation of hippuric acid through metabolism of the quinic acid present in cranberry juice” (Nicolle, 2016). However, further studies showed that the amount of hippuric acid that remained was not “sufficient for an antibacterial effect unless very large volumes of cranberry juice were ingested.” (Nicolle, 2016) Nicolle cited a recent double blind trial in which 185 elderly women were studied for a one-year period – some of whom received placebo while others received a 72 mg capsule of cranberry daily (the equivalent

of 20 ounces of cranberry juice). This study resulted in no significant differences in outcomes between the two groups.

The New York Times wrote a story about the tone of the JAMA article and the studies it referenced. Citing the study, Dr. Gupta expressed that she was not as certain as Dr. Nicolle (Hoffman, 2016). Dr. Gupta said that Dr. Nicolle's argument -- that cranberry juice is an effective diuretic, and urinating more helps rid the body of infection – could also be said about other liquids, as well. It could be argued from a nutrition standpoint that water is the better choice, given the amount of sugar added to cranberry juice for palatability (Stampler, 2014).

Concerns about antibiotic resistance are real, and the information about women's susceptibility to UTIs, particularly as they age (Hoffman, 2016), should propel more studies into alternative treatment options so that the cycle of feeding one beast while curing another may be discontinued. However, after reviewing the most up-to-date information on the effectiveness of cranberry juice in preventing or treating a UTI, it is clear that we need to pick a different alternative option.

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