The Effect of Causative Beliefs of Major Depression and Schizophrenia on the Stigma, Treatment, and Well-being of Patients

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On my honor as a University Student, I have neither given nor received unauthorized aid on this assignment as defined by the Honor Guidelines for Thesis-Related Assignments

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Life and Treatment of Those with Mental Illness

One in four people worldwide are affected by mental or neurological disorders at some point in their lives, but only two-thirds of people with a known mental disorder ever seek help from a health professional because of feelings of stigma, discrimination, and neglect (World Health Organization, 2001). The lack of people seeking professional help indicates a need for mitigation of the barriers associated with getting treatment for mental illness as well as improved, more holistic treatment and diagnostic procedures. Understanding the effects of environmental factors on the development of mental disorders is a potential solution for improving the quality of life for those suffering with mental illness.

Historically, the medical community and general public have thought of the mental disorders as only an imbalance of neurotransmitters, but in recent years there has been more of a push to recognize the role environmental factors play in the development of the diseases (Einstein & Klepacz, 2017). The evolution of the opinions of the factors that lead to the development of mental disorders is best described as a paradigm shift. The paradigm shift of considering environmental risk factors paves the way for more effective diagnostic and treatment procedures and options to help improve the quality of life of those living with these mental illnesses, especially in the context of major depression and schizophrenia. Additionally, increased awareness of the role of environmental factors in the development of major depression and schizophrenia has the potential to help start a conversation about these disorders and their development to help decrease the stigma, discrimination, and neglect associated with the

diseases. Therefore, the research question for this paper is "How do public beliefs on environmental factors as a causative factor in the development of mental illness affect the stigma, treatment, and well-being of major depression and schizophrenic patients?"

Documentary Research Analysis of Mental Illness Causative Factors

The research question for this analysis is **"How do public beliefs on environmental factors as a causative factor in the development of mental illness affect the stigma, treatment, and well-being of major depression and schizophrenic patients?"** The primary research method for this paper is documentary research methods. Google Scholar and PubMed are the chosen databases to obtain research. Google Scholar is used due to its large range of access, and PubMed provides a more detailed database with high relevance to the public health field. The keywords used to search the databases include development of major depression and *, development of schizophrenia and *, environmental factors and development of mental illness, and public or medical views of the development of schizophrenia and major depression. The * indicates a specific environmental factor that is searched such as childhood trauma, socioeconomic status, or prenatal nutrition. Additionally, more specific searches are conducted as the research forms to supplement the analysis. The documentary research was primarily conducted in the Fall 2019 semester with some final supplementary research conducted in the Spring 2020 semester.

Documentary research is the chosen method for this investigation primarily because it provided the opportunity for the synthesis of several types of research methods (survey, interview, literature review). Furthermore, documentary research provides a larger and more diverse population of individuals affected by major depression and/or schizophrenia than would

be readily available to personally interview or survey. Therefore, documentary research provides the most feasible, unbiased, and comprehensive option for investigation.

Environmental Causative Factors of Depression and Schizophrenia

Both major depression and schizophrenia are debilitating disorders that have a profound impact on the lives of its patients. In 2017 alone, approximately 11 million US adults aged 18 or older had at least one major depressive episode with severe impairment, making major depression among the most prevalent psychiatric disorders (National Institute of Mental Health, 2019). The disease is characterized by symptoms such as problems with sleeping, eating, energy, concentration, and self-worth (Schmitt, Malchow, Hasan, & Falkai, 2014). Major depression is also associated with an overall poor quality of life due to patients having numerous adverse outcomes such as difficulties in role transitions, reduced role functioning, elevated risk of secondary disorders, and increased risk of early mortality due to physical disorders or suicide (Kessler & Bromet, 2013). Schizophrenia has a lower prevalence than depression of about 1% of the population, but is similarly associated with a low quality of life (Schmitt et al., 2014). Patients are commonly found to be homeless, victims of assaults or suicides, or incarcerated (Cernovsky, 2017). These outcomes are associated with the common symptoms of hallucinations, delusions, and asociality (Schmitt et al., 2014).

In recent years, the medical community and general public have begun to consider these mental illnesses in terms of not only a chemical imbalance of the brain, but also the environmental factors that may instigate their development (Einstein & Klepacz, 2017). Specifically, studies have found connections between the development of depression and

schizophrenia with prenatal and pregnancy factors, family and childhood factors, and socioeconomic status.

Several scientists have developed the “two-hit” hypothesis for the development of major depression and schizophrenia. This hypothesis states that both genetic and environmental factors play a role in the development of the disorders at two critical points of life, the embryonic and prenatal period and puberty (Nabeshima & Kim, 2013). Prenatal stresses can include obstetric complication, undernourished birthing, winter birth, and influenza infection during pregnancy. Into childhood, evidence supports speculations that the level of expressed emotion (i.e. emotionally overinvolved attitudes) in a child’s family setting can affect whether that child develops a depressive or schizophrenic disorder (Asarnow, Tompson, Hamilton, Goldstein, & Guthrie, 1994). In addition, specifically in terms of schizophrenia, childhood trauma has been found to be a strong indicator of the likelihood of the development of the psychotic disorder (Morgan & Fisher, 2007). Other factors that could have critical effects, specifically at puberty, include bullying, mental stress, social nonconformity, diminished communication, or addictive drug abuse (Nabeshima & Kim, 2013).

Into adulthood, evidence has supported that symptoms of schizophrenia lead to low educational attainment and social isolation which in turn results in these individuals being of low socioeconomic status. Then, conditions of low socioeconomic status, such as stigma and discrimination, unemployment, and stress, are conductive to further development of the disorder (Saraceno, Levav, & Kohn, 2005). Furthermore, evidence supports that socioeconomic factors may further cause a biological change that leads people to be more susceptible to a psychotic disorder (Morgan & Fisher, 2007). Low socioeconomic status conditions, such as low parental education level, social stresses, and lack of access to treatment are also seen to play a role in the

development of major depression (Saraceno et al., 2005). Racial discrimination is moreover seen to be associated with the development of depression and schizophrenia primarily because racism has historically produced and perpetuated socioeconomic conditions, thus creating circumstances to act as a catalyst for the disorders (Chakraborty & McKenzie, 2002).

Paradigm Shift Theory

The shift in thinking from considering depression and schizophrenia in terms of only a chemical imbalance of neurotransmitters in the brain to also considering the environmental factors that can lead to the development of the disorders is best described as a paradigm shift. A paradigm is a set of beliefs and values used to describe the complexities of a phenomenon through use of several assumptions (Ridgway, Baker, Woods, & Lawrence, 2019). Thomas Kuhn, an America philosopher, coined the term paradigm shift and described it as a shift in viewpoint that occurs when the experts in a certain field can no longer describe scientific advances and new information with the current viewpoints. The paradigm shift is typically as a result of "revolutionary science" that disrupts periods of "normal science" (Kuhn, 2012). Generally, there is an initial resistance to new paradigms. The paradigms overcome this resistance and are adopted as literature increases and more scientists adopt the new paradigm. This new paradigm results in a new period of normal science with the new paradigm at its forefront (Ridgway et al., 2019).

More specifically, Kuhn detailed five phases of a paradigm shift (Ridgway et al., 2019). Phase 1 is the "pre-paradigm" phase which occurs only at the beginning of a scientific discipline when theories are incomplete. Phase 2 is the previously described "normal science" phase which continues as long as there is consensus within the discipline. Phase 3 is the crisis period where the paradigm cannot continue to explain all aspects of the subject. The crisis period can

sometimes be resolved by a continuation of normal science, but when the current paradigm fails then the process will move onto the next phase. Phase 4 is the paradigm shift or the scientific revolution which occurs when the underlying assumptions are reexamined and a new paradigm is established as a result. Phase 5 is when normal science returns once the new paradigm has established dominance over the old paradigm. This process can then reoccur in the same way, but this does not happen often.

Historically, Kuhn was criticized for his definitions being too vague and for not taking into account the wider effect of his claims (Orman, 2016). These critiques argued that due to the oversimplification of Kuhn's definitions, the concept of paradigm shift could not be applied to all scientific revolutions (Adams, n.d.). As a result, Kuhn revised his meanings of paradigm and "normal science" to the detail they are seen today with the inclusion of the five phases of paradigm shift (Orman, 2016).

Kuhn's revised definitions of paradigm shift apply well to the shift in thinking for the development of mental illness. A period of normal science of looking at the development of mental illness in terms of only neuroscience has been commonplace for several years. In contrast, there has recently been a period of revolutionary science in which more literature and studies have determined several environmental factors that can lead to the development of mental illness, especially in terms of depression and schizophrenia. As a result, the general public has largely adopted this paradigm shift. However, medical education still experiences some of the initial resistance associated with paradigm shifts, causing medical education to lag behind the beliefs of the public.

Initial Paradigm Shift in Viewpoints of the Development of Mental Illness

Research has demonstrated that the viewpoints people hold on how environmental factors have an effect on the development of depression and schizophrenia does have an effect on the stigma and social acceptance towards those with the diseases. Social acceptance and stigma in turn affects the well-being and effective treatment of the individuals. Over time, people's views on the effect environmental factors have on the development of depression and schizophrenia has changed several times. From all the changing viewpoints and stigma throughout the years, it is evident that belief in environmental factors as a causative factor towards the development of depression and schizophrenia leads to increased social acceptance and decreased stigma when the beliefs are combined with views of biogenetic factors. The combination of environmental and biogenetic viewpoints provides a holistic view on the development of these mental illnesses and as a result leads to the most effective treatment for the individuals.

Evidence of a paradigm shift of the viewpoints of causative factors of depression and schizophrenia is seen in surveys from different points in in the second half of the 20th century. Back in the 1950s, Shirley Star, a pioneer of social psychiatry and survey research, surveyed and interviewed more than 3000 Americans on their viewpoints towards those with several different kinds of mental illness (Star, 1955). In 1996, a research group decided to replicate Star's study with updated methods to analyze the change in public perceptions over time (Link, Phelan, Bresnahan, Stueve, & Pescosolido, n.d.). Several differences and similarities emerged between the 1955 and the 1996 study. For one, participants of the 1996 study were more likely to be able to identify a person with a mental illness based on a representative description. Additionally, people were more likely to endorse that the illnesses were a result of a combination of environmental and biogenetic factors in 1996. However, some environmental factors were deemed to be more causative in terms of schizophrenia and depression. Stressful circumstances

were seen by 90% of people in the 1996 study to be very or somewhat likely to be a cause of depression and schizophrenia, making it the most commonly endorsed cause of the disease. A chemical imbalance of the brain was seen to be the second most commonly endorsed response for the diseases. However, results of the 1955 and 1996 surveys both revealed an unchanged public fear of those with mental illness. This unchanged feeling of fear was evident by the fact that survey responses indicating fear that those with mental illnesses would be prone to violence were consistent between the two studies. Furthermore, people in the 1996 study were consistently likely to have the viewpoint of wanting social distance from those with mental illness, just as those in 1955.

Another study conducted in Australia in 1996 confirmed the public's notion of recognizing environmental factors as causative towards depression and schizophrenia (Jorm et al., n.d.). Immediate social environmental factors, such as day to day problems, traumatic events, and recent death, were deemed likely causes of depression. A similar trend emerged for viewpoints on the causes of schizophrenia with the difference being that in addition to immediate social environmental factors, more emphasis was put on inherited and genetic factors than they were for depression. Also, unemployment and divorce were seen as common risk factors for both of the diseases, and feelings of stigma and social distance towards those with mental illness were also confirmed by the study. These feelings of stigma and social distance towards those with mental illness likely stem from the fact that weakness of character was rated high among participants as a cause of both depression and schizophrenia.

The change in viewpoint from 1955 to 1996 indicates the paradigm shift that occurred during the second half of the 1900s. Towards the end of the century, people were more likely to recognize schizophrenia and depression and to have an understanding for the environmental

factors that could lead to their development. As a result, the general public had, for the most part, adopted the notion of a combination of environmental and genetic factors leading to the development of mental illness, but there was still a consistent stigma associated with the diseases. However, it was seen that those who had a higher education level were less likely to see weakness of character as a causative factor, and therefore, those with higher education held less stigma (Jorm et al., n.d.). This decreased level of stigma with education indicates that increased education, awareness, and understanding is the key to decreasing feelings of stigma towards those with mental illness.

The Effect of the "Decade of the Brain" on the Public Viewpoint Paradigm Shift

The 1990s was declared the "Decade of the Brain" by US Congress with the goal of advancing neuroscience as the key to improving the lives of those with debilitating neural disease, including mental illness (Pescosolido et al., 2010). With respect to mental illness, the goal of the program was to enhance public awareness of a neurobiological understanding of mental illness so that people would see abnormal behavior of those with mental disorders as just symptoms of their disease rather than an issue of character. It was thought that this approach would lead to decreased stigma of those with mental illness. As a result, the tagline for mental illness during this time was "A disease like any other."

The effects of the political advocacy of congress on the viewpoints of the public and the previous paradigm shift of the 1900s was demonstrated in multiple studies conducted in 2006. Studies found that in 2006 more people did in fact embrace a neurobiological understanding of mental illness than in 1996 (Pescosolido et al., 2010). As a result, there was an increased public endorsement for medical treatment and prescription medication for mental illnesses. Specifically, in the case of schizophrenia, brain disease was named most frequently as the primary cause of

the disease over any environmental factors (Georg Schomerus, Matschinger, & Angermeyer, 2006). Therefore, the public claimed biological causes for schizophrenia at a higher rate than literature suggests. In contrast, the public was less likely to cite brain disease as the primary cause of depression. Environmental factors such as life events or stress were more often cited as causes of depression which demonstrated that people were more likely to adopt either psychosocial causes or biological causes rather than a combination.

Although the studies demonstrated that the "Decade of the Brain" was successful in influencing people's viewpoints to a more neurobiological understanding of mental illness, the change in viewpoint did not decrease stigma as the program had hoped. In reality, it was found that people held more stigma towards those with mental illness than in 1996, especially those with schizophrenia (Pescosolido et al., 2010). More people had an unwillingness to work closely with, socialize with, or have a person marry into their family that had been diagnosed with a mental illness. People particularly indicated that they would not want someone with schizophrenia as a neighbor due to beliefs that that person would be violent at an even higher rate than noted in the 1996 study.

The change of thinking in the early 2000s demonstrated an overall deviation from the previous paradigm shift of the 1900s due to the influence of the "Decade of the Brain" program. As a result, although literature at this point in time supported the 1996 belief that the development of depression and schizophrenia is due to a combination of genetic and environmental factors, the general public had beliefs that were swayed towards what information was being presented by the government program. However, the studies done in the years after the program demonstrated that the neurobiological conception of mental illness presented to the

public increased the odds of endorsing treatment, but it was either unrelated or increased the odds of a stigmatizing reaction (Pescosolido et al., 2010).

Disconnect between Current Public Beliefs and Medical Education

In contrast to the viewpoints pushed by the "Decade of the Brain," numerous works in the current day urge the further development of a paradigm shift away from the theory of only neurotransmitter imbalance to more complex and holistic causes (Einstein & Klepacz, 2017). It has become evident in recent years that the public is more likely to endorse the complex pathology of mental illnesses as including both environmental and biological factors. For instance, a 2017 study found that students were likely to state that mental illnesses have a complex pathology and that factors such as systemic racism and trauma can influence their development. However, although these were the personal beliefs of the students, they also stated that in terms of any medical education, they were taught that mental illnesses had uniform pathologies and systemic racism did not contribute or was not mentioned. Moreover, students stated that in medical education they were taught that mental illness was caused solely by neurotransmitter abnormalities, but they personally believed that environmental factors could influence the development of mental illness independently of neurotransmitter imbalance.

The analysis of student's personal beliefs in comparison to what they had been taught in medical education revealed that the general public has increasingly adopted the belief in the holistic causes of mental illness, but they are not being taught the holistic view in their education. Therefore, the current paradigm of medical education has the potential to miss several concepts that are well studied in the literature, such as the numerous environmental factors (Einstein & Klepacz, 2017). There are several potential reasons that medical education is lagging behind the general perception of the public and students. For one, it is arguably easier to teach the pathology

of mental illnesses in terms of neuroscience abnormalities to an audience of STEM thinking students rather than incorporate the complex psychosocial aspects. Likewise, those who are teaching medical education are most likely of an older generation that was influenced by the research of the "Decade of the Brain," which mostly looked to describe mental illness only in terms of neurotransmitters. Although there is current research outlining the effect of environmental factors on several mental illnesses, it may not be incorporated into basic medical education curriculum.

Although the 2017 study indicated that the general public, especially those of younger age groups, is now more likely to adopt a holistic view of the causes of mental illness, further studies have demonstrated that the holistic view does not extend towards feelings of all mental illnesses. As of 2019, trends of public beliefs have branched towards differing opinions of depression and schizophrenia. A study of the US public found that participants were significantly more likely to attribute environmental factors like stressful life event, work-related stress, and problems with partner or family as causes for depression than schizophrenia, similarly to the 2006 study (Nersessova, Jurcik, & Hulsey, 2019). Furthermore, participants were also more likely to endorse neurobiological factors like chemical imbalance, brain disease, and hereditary defect as causes for schizophrenia in contrast to depression. The data of the study represents that in current times, although there has been a paradigm shift to greater understanding of these mental illnesses and the consideration of environmental causes, this paradigm shift has not become fully adopted for all mental illnesses.

Stigma and Dangerous Effects of Viewpoints on Mental Health Patients

The viewpoints of the public and medical community on the causes of mental illness have an effect on the stigmatization and treatment of depression and schizophrenia. Studies have

found that beliefs of only biogenetic causes of mental illness enhance a perceived 'us' versus 'them' mentality that foster notions of dangerousness and a stronger sense of rejection towards those with mental illnesses (G. Schomerus, Matschinger, & Angermeyer, 2014). Specifically, for schizophrenia and depression, perceived notions of biogenetic causes were associated with higher perceived dangerousness and stronger differentness which led to an overall lower social acceptance of those with the disorders. In contrast, when causal beliefs were attributed to current stress in the person's life, there was an increased social acceptance for schizophrenia and no effect on social acceptance for depression. The results demonstrate that when people believe in overall biogenetic causes of schizophrenia and depression, there is a higher rate of stigma towards those patients because they are perceived as different and not in control. In contrast, when people believe in environmental factors having an effect on the development of the disorders, the general public is more likely to be accepting of the mental illnesses because of an increased perception of understanding and relatability to those affected by schizophrenia and depression. Therefore, people's differing beliefs on the causes of schizophrenia and depression have a direct or indirect effect on the stigmatization towards the diseases.

The stigmatization of schizophrenia and depression is important because it affects the effectiveness of treatment of the disorders. Mental illness related stigma in healthcare has been identified as a major barrier in access to treatment and recovery and to poorer physical care quality for persons with mental illnesses (Knaak, Mantler, & Szeto, 2017). Mental health patients have commonly reported feelings of being devalued, dismissed, and dehumanized by health professionals, and 79% of mental health patients have reported first hand experiences of discrimination (Knaak, Mantler, & Szeto, 2017). These feelings have been attributed towards lack of awareness and unconscious bias, therapeutic pessimism, and lack of skills of physicians.

There are several consequences of stigma for access and quality of care for mental health patients. For example, anticipated stigma from healthcare providers has been identified as a key factor in reluctance to seek help for mental illness. Additionally, mental health patients commonly report that they receive poor quality care in terms of their non-mental health needs because their physical symptoms are not taken seriously and instead are attributed to their mental illness. Furthermore, the dangerous effects of stigma go beyond the healthcare setting and have been linked to low peer support, decreased productivity, and increased rate of suicide for the individuals affected.

One of the best ways to decrease the stigma associated with depression and schizophrenia, and mental illnesses in general is to provide interventions that bust myths about the mental illnesses and target unconscious biases (Knaak et al., 2017). Therefore, incorporating a transformative learning focus in these interventions to educate people on the importance of a holistic view of the causes of schizophrenia and depression could be highly beneficial to decreasing stigma and improving treatment due to the evidence that one-side causal beliefs tend to increase stigma towards mental disorders.

Opportunities for Further Analysis

As with all studies, several limitations exist throughout this research paper. First, the method of information collection, documentary research methods, had several inherent limitations. For one, each study that was used towards this paper had limitations of its own such as the sample available, potential bias or dishonesty of survey participants, and limited timeframe of sample collection. In addition, several studies were synthesized in order to answer the research question. The synthesis of results was subject to limitations due to the use of studies

from a variety of research groups over multiple countries. Therefore, the results of each study were not perfectly compatible for synthesis.

Future research should focus on more reasons for mental health stigmatization beyond beliefs of causes of development. Additionally, this research paper focused primarily on schizophrenia and depression, but future research should look into more mental illnesses and how they are affected by public beliefs. For instance, in the research for this paper, it was found that there is a large amount of interesting research in regard to alcohol and substance dependence, the stigma towards those disorders, and how treatment and life of the individuals is affected. Therefore, focusing on the dependence diseases would be an interesting and important future direction to explore.

The Importance of Viewpoints on Causative Factors in the Treatment of Mental Illness

When environmental causative factors are considered in conjugation with biogenetic factors of schizophrenia and depression, there is the least stigmatization and the most social acceptance and effective treatment for the patients as opposed to either of the factors considered alone. The synthesized research in this paper demonstrates that the public and medical beliefs about depression and schizophrenia have an essential impact on the individuals who suffer from the mental illnesses. Therefore, it is important that individuals are educated on the broad range of causative factors of mental illness so that those with depression and schizophrenia have increased opportunities for effective treatment, are accepted by peers, and have an overall better well-being and quality of life.

References

Adams, A. J. (n.d.). Objections to Kuhn's theory of scientific progression - Hektoen International. Retrieved October 21, 2019, from https://hekint.org/2017/01/22/objections-to-kuhns-theory-of-scientific-progression/

Asarnow, J. R., Tompson, M., Hamilton, E. B., Goldstein, M. J., & Guthrie, D. (1994). Family-expressed emotion, childhood-onset depression, and childhood-onset schizophrenia spectrum disorders: Is expressed emotion a nonspecific correlate of child psychopathology or a specific risk factor for depression? *Journal of Abnormal Child Psychology*, *22*(2), 129–146. https://doi.org/10.1007/BF02167896

Cernovsky, Z. (2017). Quality of life in persons with schizophrenia. *Mental Illness*. Page Press Publications. https://doi.org/10.4081/mi.2017.7052

Chakraborty, A., & McKenzie, K. (2002). Does racial discrimination cause mental illness? *British Journal of Psychiatry*, *180*(06), 475–477. https://doi.org/10.1192/bjp.180.6.475

Einstein, E. H., & Klepacz, L. (2017). What Influences Mental Illness? Discrepancies Between Medical Education and Conception. *Journal of Medical Education and Curricular Development*, *4*, 2382120517705123. https://doi.org/10.1177/2382120517705123

Jorm, A. F., Korten, A. E., Jacomb, P. A., Christensen, H., Rodgers, B., & Pollitt, P. (n.d.). Public beliefs about causes and risk factors for depression and schizophrenia. *Social Psychiatry and Psychiatric Epidemiology*, *32*(3), 143–148. https://doi.org/10.1007/bf00794613

Kessler, R. C., & Bromet, E. J. (2013). The Epidemiology of Depression Across Cultures. *Annual Review of Public Health*, *34*(1), 119–138. https://doi.org/10.1146/annurev-publhealth-031912-114409

Knaak, S., Mantler, E., & Szeto, A. (2017, March 1). Mental illness-related stigma in healthcare: Barriers to access and care and evidence-based solutions. *Healthcare Management Forum*. SAGE Publications Inc. https://doi.org/10.1177/0840470416679413

Kuhn, T. S. (2012). *The Stucture of Scientific Revolutions* (4th Editio). Chicago: The University of Chicago Press. Retrieved from https://books.google.com/books?hl=en&lr=&id=3eP5Y_OOuzwC&oi=fnd&pg=PR5&ots=xV3JA6iLrM&sig=68_WhcOdoaE0q5ugshvt5hP3AVE#v=onepage&q&f=false

Link, B. G., Phelan, J. C., Bresnahan, M., Stueve, A., & Pescosolido, B. A. (n.d.). *Public Conceptions of Mental Illness: Labels, Causes, Dangerousness, and Social Distance*.

Morgan, C., & Fisher, H. (2007). Environment and schizophrenia: environmental factors in schizophrenia: childhood trauma--a critical review. *Schizophrenia Bulletin*, *33*(1), 3–10. https://doi.org/10.1093/schbul/sbl053

Nabeshima, T., & Kim, H.-C. (2013). Involvement of genetic and environmental factors in the onset of depression. *Experimental Neurobiology*, *22*(4), 235–243. https://doi.org/10.5607/en.2013.22.4.235

National Institute of Mental Health. (2019). Major Depression. Retrieved September 22, 2019, from https://www.nimh.nih.gov/health/statistics/major-depression.shtml

Nersessova, K. S., Jurcik, T., & Hulsey, T. L. (2019). Differences in beliefs and attitudes toward Depression and Schizophrenia in Russia and the United States. *International Journal of Social Psychiatry*, *65*(5), 388–398. https://doi.org/10.1177/0020764019850220

Orman, F. T. (2016). *"Paradigm" as a Central Concept in Thomas Kuhn's Thought*. *International Journal of Humanities and Social Science* (Vol. 6). Retrieved from www.ijhssnet.com

Pescosolido, B. A., Martin, J. K., Long, J. S., Medina, T. R., Phelan, J. C., & Link, B. G. (2010). CHANGE IN PUBLIC REACTIONS TO SCHIZOPHRENIA, DEPRESSION, AND ALCOHOL DEPENDENCE.

Ridgway, E., Baker, P., Woods, J., & Lawrence, M. (2019, March 1). Historical developments and paradigm shifts in public health nutrition science, guidance and policy actions: A narrative review. *Nutrients*. MDPI AG. https://doi.org/10.3390/nu11030531

Saraceno, B., Levav, I., & Kohn, R. (2005). The public mental health significance of research on socio-economic factors in schizophrenia and major depression. *World Psychiatry : Official Journal of the World Psychiatric Association (WPA)*, *4*(3), 181–185. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/16633546

Schmitt, A., Malchow, B., Hasan, A., & Falkai, P. (2014). The impact of environmental factors in severe psychiatric disorders. *Frontiers in Neuroscience*, *8*, 19. https://doi.org/10.3389/fnins.2014.00019

Schomerus, G., Matschinger, H., & Angermeyer, M. C. (2014). Causal beliefs of the public and social acceptance of persons with mental illness: A comparative analysis of schizophrenia, depression and alcohol dependence. *Psychological Medicine*, *44*(2), 303–314. https://doi.org/10.1017/S003329171300072X

Schomerus, Georg, Matschinger, H., & Angermeyer, M. C. (2006). Public beliefs about the causes of mental disorders revisited. *Psychiatry Research*, *144*(2–3), 233–236. https://doi.org/10.1016/j.psychres.2006.05.002

Star, S. A. (1955). *The Public's Ideas about Mental Illness*.

World Health Organization. (2001). WHO | Mental disorders affect one in four people. Retrieved December 2, 2019, from https://www.who.int/whr/2001/media_centre/press_release/en/