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Treatment Methods for Major Depressive Disorder: Psychotherapy vs. Pharmacotherapy

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Abstract

Major Depressive Disorder (MDD) is one of the most prevalent mental disorders in society.

Treatment methods for this disorder have been the topic of debate among researchers to determine the most effective method to prevent relapse for individuals with MDD.

Psychotherapy and pharmacotherapy are the most commonly used treatment methods. Each method, when used on its own, has advantages and disadvantages in treating the specific symptoms of MDD. A psychotherapeutic treatment course of Cognitive Behavioral Therapy (CBT) will focus on treating the behavioral factors that contribute to MDD (e.g., lack of exercise, inappropriate coping mechanisms, and inadequate social ties), but a focus on these factors may leave the biological factors of MDD (e.g., defects in neurotransmitters, genetics, and brain structure) untreated, which is the focus of treatment in a pharmacotherapeutic method using SSRI medications. With a combined treatment course of both psychotherapy and pharmacotherapy, the behavioral and biological symptoms associated with MDD may be treated in a focused, effective manner.

Treatment Methods for Major Depressive Disorder: Psychotherapy vs. Pharmacotherapy

Major Depressive Disorder (MDD) is one of the most prevalent and burdensome mental disorders in today's society (Blais et al., 2013). Approximately 1 in 5 adults will experience a major depressive episode at some point in their lifetime (Fakhoury, 2015). Along with a high prevalence rate, MDD has also proven to be highly recurrent in nature. In a study done by Solomon et al. (2000), researchers studied a group of individuals with MDD after completing treatment to determine the likelihood of relapse. The findings of this study, as shown in Figure 1, demonstrated that after recovering from MDD, the probability of a first relapse is 25% after one year, 42% after two years, and 60% after five years. Following a first relapse, the probability of experiencing a second relapse is 41% after one year after the relapse, 59% after two years, and 74% after five years. The findings of this study show that there is a high probability for relapse for those who successfully completed treatment, either by way of psychotherapy or pharmacotherapy. This high probability has led to much research aimed toward determining whether psychotherapy or pharmacotherapy is more effective in ensuring a lasting recovery for those suffering from MDD.

Psychotherapy is a treatment method in which an individual and a therapist meet in a counseling setting to resolve the issues that are causing a particular mental illness. Cognitive Behavioral Therapy (CBT) is one of the most common and effective forms of psychotherapy used in the treatment of MDD (Wiles et al., 2016). According to Wiles et al. (2016), "CBT teaches patients skills to help them better manage their mood, and so has the potential to result in benefit that is sustained beyond the end of therapy" (p. 137). Because of the relapsing nature of depression, the skills learned through CBT can help individuals recognize and manage recurrent symptoms to prevent further relapse (Petersen, Sprich, & Wilhelm, 2016). Although

psychotherapy is effective in treating MDD, it is mostly aimed at treating the behavioral factors of MDD, such as coping with stressful life events, lack of exercise, poor coping strategies, and sociocultural factors (Neitzke, 2016; Woodend, Schölmerich, & Denктаş, 2015). With this aim, it does not focus on treating the biological factors associated with MDD as effectively as a pharmacotherapeutic method would.

Pharmacotherapy can be defined as the treatment of a mental disorder using medications and other substances to manage the symptoms of a particular disorder. Many biological factors can contribute to MDD. This review will focus on three factors: neurotransmitters, genetics, and brain structure (Fakhoury, 2015; Nutt, 2008). According to Nutt (2008), many different types of antidepressants have been used since their discovery in the 1950s, but the most effective antidepressant medication appears to be selective serotonin reuptake inhibitors (SSRIs), which are currently the most commonly used medications for treating MDD. There are advantages and disadvantages of treating with pharmacotherapy alone. Pharmacotherapy may yield faster relief from the symptoms associated with MDD and is more convenient than taking the time to meet personally with a psychotherapist; however, because of this, pharmacotherapy may not treat the underlying causes (T. Salisbury, personal communication, March 6, 2017). With a focus on treating the biological factors of MDD, pharmacotherapy can be effective in short-term treatment; but, without treating the underlying causes of MDD, a treatment course of pharmacotherapy alone may lead to a higher probability of relapse.

The fact that neither psychotherapy nor pharmacotherapy can fully treat all the symptoms of MDD has been the main cause for debate and research among psychologists to determine which method is a more effective treatment. Much of the research has suggested that when choosing one treatment method over the other, psychotherapy is more effective in preventing

relapse of symptoms (Blackburn, Eunson, & Bishop, 1986; Blais et al., 2013; Huhn et al., 2014). Although psychotherapy is an effective method on its own for treating MDD, a combined approach incorporating both psychotherapy and pharmacotherapy may offer a better treatment course because a combination of these methods treats both the biological and behavioral factors associated with MDD. An in-depth examination of both methods, first of psychotherapy and the behavioral factors, followed by pharmacotherapy and the biological factors, with their advantages and disadvantages, will show the need for a combined treatment method for MDD.

Psychotherapy

In order to understand the advantages and disadvantages of psychotherapy as a treatment course for MDD, the behavioral factors of MDD must first be addressed. Furthermore, an understanding of these factors might suggest that CBT may be the best method to address these behavioral factors. This section discusses both the behavioral factors of MDD and the CBT treatment method used to treat those factors.

Behavioral Factors of MDD

Behavioral factors have been shown to contribute to the onset and development of MDD. Woodend et al. (2015) have identified three specific behavioral factors: lack of exercise, inappropriate coping mechanisms, and inadequate social ties. This section will examine these three behavioral factors and discuss the psychotherapeutic methods through which these factors are treated.

Lack of exercise. According to Woodend et al. (2015), a lack of physical exercise greatly increases the probability of being diagnosed with MDD (p. 2319). In a study done by Strawbridge, Deleger, Roberts, and Kaplan (2002), 1,947 subjects were examined to determine the effects of physical exercise on reducing the occurrence of MDD. To define the parameters of

physical exercise, the researchers administered a survey to measure how often each subject went on long walks, engaged in strenuous exercise, participated in sports, and went swimming. Subjects answered on a scale of 1 to 8, with one signifying that they never engaged in the activity and eight signifying that they participated very often in the activity. Researchers divided the results into three separate levels of activity: low (scores from 0-2), medium (scores from 3-5), and high (scores from 6-8). Depression was measured by the criteria found in the DSM-IV. The prevalence of depression was 11% for subjects who reported low physical activity, 6.1% for subjects who reported medium physical activity, and only 3% for subjects who reported high physical activity (Strawbridge et al., 2002). These results suggest that those who do not engage regularly in physical activity are nearly four times more likely to experience depression than those who exercise on a regular basis.

Maladaptive coping mechanisms. A coping mechanism is the source individuals turn to in a stressful or otherwise negative life situation (Woodend et al., 2015). Two different ways to cope exist when facing a stressful life situation: adaptive and maladaptive coping (Mahmoud, Staten, Hall, & Lennie, 2012). According to Mahmoud et al. (2012), an adaptive coping strategy involves identifying a stressful situation, seeking out and finding help, and acting in a way to resolve the situation. By following the appropriate steps, an adaptive strategy will not only result in a resolution of the situation but will also result in psychological and emotional adjustment. A maladaptive coping strategy involves the individual withdrawing themselves from those around them and avoiding the stressful situation altogether; paradoxically, avoiding the stressful situation usually contributes to added measures of stress, which can lead to both anxiety and depression, potentially increasing the likelihood of a major depressive episode (Mahmoud et al., 2012). Based on this understanding, as individuals incorporate more adaptive coping skills, there

may be a decreased amount of stress that could potentially trigger a major depressive episode.

Mahmoud et al. (2012) conducted a study on college students to measure the correlation between coping strategies and depression and anxiety levels. In this study, 1,700 students were selected at random and administered the Depression-Anxiety Stress Scale-21 (DASS-21) and the Brief COPE Inventory (BCI) to assess this relationship. The survey found that a positive correlation between maladaptive coping strategies and depression existed in these students. Those who reported maladaptive strategies also scored significantly higher in their levels of depression (Mahmoud et al., 2012). These results suggest that inappropriate coping mechanisms may play a significant role in the development of depression.

Inadequate social ties. Relationships with family, friends, and other members of the community can play a role in the onset and development of MDD (Woodend et al., 2015). According to Lin, Ye, and Ensel (1999), social ties can affect the mental health of an individual in many different ways. Lin et al. (1999) divided the necessary social needs into three different categories: perceived and actual support, emotional and instrumental support, and routine and crisis support (p. 346). Without any one of these support categories, the risk of MDD increases. Perceived and actual support is the support that a person both perceives to receive and actually receives. It is possible to have one without the other, but to have the full effect of the support, both elements need to be present. Emotional support is having a social source to express feelings, vent frustrations, seek understanding, and build self-esteem while instrumental support is a social source through which tangible assistance can be achieved (e.g., help with chores, money, and school). Routine support is having a source of support for regular, day-to-day activities such as child care, grocery shopping, and transportation; in contrast, crisis support is having a source of support in high stress situations such as divorce, car accidents, and medical emergencies (Lin et

al., 1999). It is important to have support of each of these kinds to be able to manage stressful situations that could trigger a depressive episode. With each category covered, the likelihood of depression decreases significantly.

A study conducted by Lin et al. (1999) in which 1,261 subjects were surveyed regarding their support structures and depression levels illustrates how inadequate social ties increases the likelihood of MDD. Out of all the categories that subjects were surveyed on, the categories that decreased depression levels most effectively were number of weekly contacts, the presence of an intimate relationship, and the presence of a strong social network (p. 352). With these types of social support, depression decreases, and as individuals begin to isolate themselves from others, the probability of having a major depressive episode increases significantly (Woodend et al., 2015). The results of this study show that as individuals develop these types of social ties, the likelihood of a major depressive episode decreases significantly.

While many other behavioral factors play a role in the development of MDD, lack of exercise, maladaptive coping skills, and inadequate social ties provide a foundation for understanding why a psychotherapeutic method of treatment is effective in the treatment course of MDD. CBT may be an effective method for addressing these behavioral factors of MDD.

Cognitive Behavioral Therapy

The goal of CBT is to help individuals develop skills to recognize and prevent symptoms outside of therapy. According to Wiles et al. (2016), “CBT teaches patients skills to help them better manage their mood, and so has the potential to result in benefit that is sustained beyond the end of therapy” (p. 137). This section will overview the methods used in a therapeutic setting in treating and preventing symptoms associated with MDD.

The main focus of CBT is known as case conceptualization. Case conceptualization is a therapist's method of helping the individual analyze potential triggers, recognize symptoms, and successfully overcome symptoms (Petersen et al., 2016). According to Petersen et al. (2016), in case conceptualization the therapist follows the Antecedent, Behavior, Consequence (ABC) Model (p. 8). This model allows the client to analyze what happened before, during, and after the onset of symptoms, enabling them to manage the behavioral factors manifest.

The first focus of the ABC Model is the antecedent, which focuses on analyzing the events that occur just before the onset of a symptom. The second focus, behavior, helps the individual determine the behaviors engaged as a result in the onset of symptoms. The final focus, consequence, helps the individual determine the positive or negative results of the behavior which helps to determine the likelihood that a behavior will be repeated (Peterson et al., 2016). With the help of a therapist, the three focuses of the ABC model can help individuals successfully think through the onset of symptomology to reduce the severity of those symptoms over time.

This method of treatment has been shown to be effective in addressing treatment-resistant depression. In a study done by Wiles et al. (2016), 469 subjects were studied to determine the effectiveness of CBT. Half were chosen at random to participate in a CBT program while the other half continued to be treated with medications and other therapeutic methods. A treatment course was followed with an average length of 12 therapy sessions. After 46 months, the researches followed up with each patient. On average, those in the group receiving CBT treatment scored significantly lower on the depression scale than those who received the usual treatment course (Wiles et al., 2016, pp. 140-141). This study suggests that the skills learned in CBT as a result of the ABC Model can help reduce the probability of relapse of MDD symptoms.

While it may seem that a psychotherapeutic method with a focus on CBT can effectively treat MDD on its own, this approach also has disadvantages. According to Dr. T. Salisbury (personal communication, March 6, 2017), a practicing clinical psychologist, it is difficult for many individuals experiencing MDD to find the motivation to take the time to meet with a therapist as often as it takes to treat MDD. Additionally, Wiles et al. (2016) explains how psychotherapy is a long-term treatment and progress within psychotherapy can be slow and cause individuals to be discouraged and not follow through with the treatment course. However, the main disadvantage to a psychotherapeutic approach is that the biological factors of MDD are not focused on and may be left untreated.

Pharmacotherapy

Knowing that a treatment course of psychotherapy alone does not focus on the biological factors of MDD, a need arises for pharmacotherapy. This section will address that need and will suggest a pharmacotherapeutic treatment course using SSRIs to treat the biological factors associated with MDD.

Biological Factors of MDD

While it is true that the behavioral factors studied in the previous section play a significant role in the development of MDD, if the biological factors are left untreated, the whole scope of this disorder may not be fully treated. Fakhoury (2015) suggests three biological factors that influence the development and recurrence of MDD: neurotransmitters, genetics, and brain structure.

Neurotransmitters. Neurotransmitters deliver messages between neurons in the brain and play a significant role in depression levels (Nutt, 2008). The three main neurotransmitters that play a role in depression are dopamine, norepinephrine, and serotonin (reference). Each of

these neurotransmitters contributes to different depressive symptoms. Dopamine regulates motivation, attention, and overall pleasure; norepinephrine regulates alertness, energy, and overall interest in life; and serotonin regulates anxiety, obsessions, and compulsions (Nutt, 2008, p. 6). In treating abnormalities in these neurotransmitters, a practitioner may attempt to raise the levels of all three simultaneously, which would increase mood overall; however, focusing on the specific symptoms being presented by each neurotransmitter could be more effective in the overall treatment course.

Defects in various neurotransmitters can lead to differing symptoms and types of depression. Nutt (2008) describes two types of depression as “an increase of negative affect and a loss of positive affect” (p. 6). An increase of negative affect refers to seeing the world as hostile and negative, and this type of depression generally leads to the development of anxiety disorders; a loss of positive affect refers to a person losing interest in normal activities and leads to a loss of motivation (Nutt, 2008). If a practitioner focuses on whether an individual is experiencing an increase of negative affect or a decrease in positive affect, then a specific pharmacotherapeutic treatment course can be formed and the pertinent neurotransmitter levels can be corrected to decrease the symptoms of depression.

Research suggests that pharmacotherapeutic methods are not always needed to raise neurotransmitter levels. For example, a study done by Sutoo and Akiyama (1996) showed that exercising between 15 and 60 minutes each day can significantly raise dopamine levels. However, a focus on only the behavioral factors of MDD may not give enough attention to the correction of neurotransmitter levels in the brain needed to provide the most effective treatment course.

Genetics. There seems to be a link between family history of MDD and the likelihood of an individual developing this disorder (Fakhoury, 2015). According to Fakhoury (2015), several genes contribute to the development of MDD in an individual (see Table 1). As seen in Table 1, genes contribute to the processes involved in MDD. For example, the serotonin transporter protein is responsible for transporting serotonin from the synapses of one neuron to the presynaptic space of another; the tryptophan hydroxylase 2 gene is involved in the synthesis of serotonin; and the insulin-like growth factor 1 gene regulates many processes involved in the development of MDD. These genetic factors play a role in depression, and if people are born with variant in these genes, they already have a natural susceptibility to developing MDD in their lifetime. Because of this, when these people experience normal stressors, they are more likely to exhibit symptoms of depression, which may eventually lead to a diagnosis of MDD.

Brain structure. Through the advancement of imaging technology, discoveries in brain function have shown that depression levels can be linked to the hippocampus, amygdala, and prefrontal cortex region of the brain (Fakhoury, 2015). Each of these parts of the brain plays a separate role in mood and the expression of emotion, and defects in these parts of the brain contribute separate symptoms of depression. The hippocampus is the portion of the brain that processes information and stores and analyzes memories (Marchand, Dilda, Jensen, & Wahlen, 2005). Fakhoury (2015) asserts that a defect in this portion of the brain contributes to impaired memory function and an overall depressed mood state. In contrast, Marchand et al. (2005) suggests the amygdala is responsible for emotional learning and emotional response to stimuli. In those with MDD, the amygdala has been found to be undersized, causing slower responses to emotional situations. Furthermore, the prefrontal cortex is believed to be the most involved part of the brain in MDD as it is involved with mood regulation, executive reasoning, the expression

of personality, and social behaviors (Marchand et al., 2015). In the case of defect in each of these parts of the brain, the functioning of neurotransmitters is impaired (Fakhoury, 2015). This makes individuals with abnormalities of the hippocampus, amygdala, and prefrontal cortex more likely to develop MDD in their lifetime.

Selective Serotonin Reuptake Inhibitors (SSRIs)

Research seems to suggest that defects in levels of neurotransmitters, genetic predispositions, and differences in brain structures can impair the ability of the brain to normally send signals between neurons by way of neurotransmitters. Many antidepressant medications have been developed and tested over the past decades, but the most effective and commonly used medications appear to be SSRIs (Nutt, 2008, p. 4-5). The goal of SSRIs is to raise activity levels of neurotransmitters in the brain, and a practitioner will normally prescribe daily doses which will indirectly raise serotonin levels by blocking reuptake (Vaswani, Linda, & Ramesh, 2003). With the SSRI drug regulating the production of serotonin and other neurotransmitters, brain functioning improves, allowing the individual to find relief from the symptoms they are experiencing.

The development of SSRIs to treat those struggling with MDD has significantly improved the short-term treatment of this disorder. It has allowed individuals to experience faster progress than progress experienced through a psychotherapeutic treatment course (T. Salisbury, personal communication, March 6, 2017). However, just as psychotherapy may not treat the biological factors of MDD, a treatment course of pharmacotherapy alone may not completely treat the potential behavioral factors, and when those factors are left untreated, the possibility of relapse may increase significantly (Guidi, Tomba, & Fava, 2015). In a comprehensive meta-analysis done by Guidi et al. (2015), a long-term treatment course of pharmacotherapy alone

tended to lead to higher relapse rates, because the medications brought negative side effects; there were potential negative reactions with medical conditions to the drugs; and individuals tended to have negative withdrawal symptoms upon discontinuing drug therapy. With these factors in mind, a pharmacotherapeutic method of treatment alone may not offer the best treatment course for those struggling with MDD.

Combined Treatment

Much research has been done on the efficacy of pharmacotherapy and psychotherapy in treating MDD. When studying both methods on their own, much of the research suggests that psychotherapy could offer a better treatment course than pharmacotherapy (Blais et al., 2013; Huhn et al., 2014). However, studies by both Blackburn et al. (1986) and Wiles et al. (2016) showed that a combination of psychotherapy and pharmacotherapy can be most effective. Wiles et al. (2016) studied 469 individuals receiving treatment for MDD. Subjects were divided randomly into a combined treatment group and a group receiving treatment with antidepressants only and were re-assessed 46 months after ending treatment. Those who took part in the combined treatment group scored significantly lower in depression levels than the control group. In the study performed by Blackburn et al. (1986), subjects were randomly divided into three treatment groups: psychotherapy, pharmacotherapy, and a combined treatment group. Two years after treatment, researchers followed up to determine relapse rates among the groups. The findings of this follow-up showed that 30% of those who received pharmacotherapy experienced at least one relapse of depressive symptoms, 6% of those who participated in psychotherapy experienced relapse, while no subjects who received a combined treatment method experienced a relapse. While more research needs to be done to determine the clinical significance of these

studies, more effective treatment seems to come from a combination of psychotherapeutic and pharmacotherapeutic treatment methods.

Conclusion

Many factors need to be considered when suggesting a treatment course for MDD. As shown in this review, both psychotherapy and pharmacotherapy have many advantages for patients in treatment for this disorder. Those suffering from MDD often exhibit many behavioral factors that may be best addressed in a therapeutic setting. With the help of a therapist through CBT, individuals can receive help in time management to make adequate time for exercise which will help increase dopamine levels in the brain (Woodend et al., 2015). Further, a therapist can assist in developing positive coping mechanisms to respond to stressful situations in healthy ways which can also assist in developing healthy social ties to help through the healing process (Mahmoud et al., 2012; Petersen et al., 2016; Woodend et al., 2015). The goal of the therapeutic process is to prevent relapse by teaching skills to put into practice as symptoms begin to emerge (Wiles et al., 2016).

Individuals with MDD also exhibit many biological factors, such as deficits in neurotransmitters, abnormal brain structure, and genetics. While these factors could be improved through psychotherapy, a treatment plan focused on pharmacotherapy could provide more effective treatment. SSRIs can be used to treat deficiencies in neurotransmitter levels, genetics, and brain structures (Fakhoury, 2015; Nutt, 2008). While pharmacotherapy may be effective in treating the symptoms in the short term, the goal of this method does not include a long-term treatment plan to prevent relapse, which is why psychotherapy on its own may be the preferred treatment course.

Although psychotherapy has shown benefits over pharmacotherapy, a patient suffering from MDD should not be forced to choose one method over the other. A combined treatment of both methods may offer a better course. By receiving a combination of psychotherapy and pharmacotherapy, the patient will benefit from the long-term advantages of psychotherapy and CBT while also benefiting from the short-term effects of pharmacotherapy and SSRIs. In following this treatment course, both treatment methods complement each other, as psychotherapy treats the behavioral factors that pharmacotherapy does not focus on treating, and inversely, pharmacotherapy focuses on treating the biological factors that psychotherapy does not focus on treating.

While existing research has shown that a combined treatment method has an advantage over treating with either psychotherapy or pharmacotherapy alone, more research is needed to determine the clinical significance of existing findings. Therapists and other mental health professions need to implement a combined approach to treat both the behavioral and biological factors of MDD. As more individuals receive a combined treatment course, symptoms of MDD can stay in remission and the probability of relapse can decrease.

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Appendix

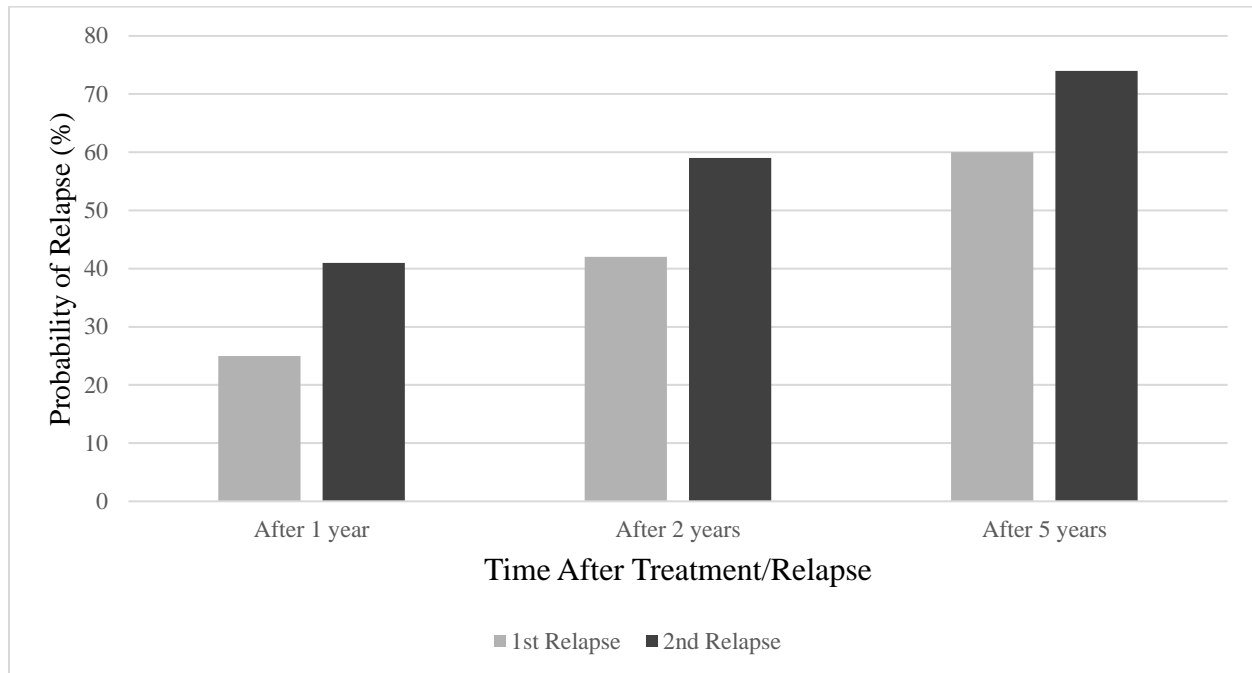


Figure 1. Bar graphs represent the probability of relapse post-treatment. Adapted from “Multiple Recurrences of Major Depressive Disorder,” by D. A. Solomon, M. B. Keller, A. C. Leon, T. I. Mueller, P. W. Lavori, M. T. Shea, ... and J. Endicott, 2000, *American Journal of Psychiatry*, 157(2), pp. 229-233.

Table 1

Genes Involved in Development of MDD

Gene Name	Location	Function
Hydroxytryptamine receptor 2A	Chromosome 13	Coupled with a protein to promote serotonin transduction in the cell.
Serotonin transporter protein	Chromosome 17	Transports serotonin from synapse neuron to the presynaptic neurons.
Brain-derived neurotrophic factor	Chromosome 11	Promotes survival of neurons by preventing apoptosis.
Fibroblast growth factor	Chromosome 4	Growth factor that promotes hippocampal growth.
Insulin-like growth factor 1	Chromosome 12	Regulates processes involved in MDD.
Tryptophan hydroxylase 2	Chromosome 12	Involved in the synthesis of serotonin.

Note. This table outlines a number of genes that are involved in the development of Major

Depressive Disorder. Adapted from “New Insights into the Neurobiological Mechanisms of

Major Depressive Disorders,” by M. Fakhoury, 2015, *General Hospital Psychiatry*, 37(2), pp.

172-177.