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Examining Major Depressive Disorder and Autobiographical Memory

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Abstract

Major depressive disorder is a common mental disorder that occurs in a lot of individuals around the world and can greatly impact a person's life. Autobiographical memories are the memories a person has about various life events and events that are happening around the world. Major depressive disorder is known to have a great influence on how autobiographical memories are recalled and interpreted. This meaning that individuals with major depression have a harder time recalling positive autobiographical memories and specific details associated with them. Major depression affects the brain because it can change the amygdala activity that occurs when recalling negative autobiographical events. Major depression can also cause damage to memory systems that exist in the brain and change how depressed individuals interpret events in life. Many studies have been conducted to help determine the underlying causes and treatments of poor recall in autobiographical memories for depressed individuals.

Introduction

Major Depressive Disorder affects many people and can create great impairment on one's life. It can affect a person's mood, mind, social world and how a person lives their life. It is important to understand what depression can affect and how we can solve these potential issues. One major connection major depressive disorder is known to have is with autobiographical memory (Söderlund, 2014). This connection is established because when a person has major depressive disorder, a negative outlook is usually a key symptom people experience. This negative outlook affects the brain's amygdala activity and makes it so individuals with depression may not remember their memories entirely or specific details about the event. The link between major depressive disorder and autobiographical memory is discussed as well as potential causes and treatments that can be used to resolve the poor recall depressed individuals have with autobiographical memories.

Review of Literature

Major Depressive Disorder

Söderlund (2014) describes major depressive disorder as a very common mental disorder that affects up to 17% of the world's population. Major depressive disorder is known to primarily affect the emotions a person experiences and their well-being. Although this is true, it can also affect how well a person copes with common life situations such as a divorce or a death of a family member (Söderlund, 2014). Major depressive disorder can also affect how attentive a person is and a person's cognitive processing (Söderlund, 2014). Overall, depression can create a consistent feeling of hopelessness and sadness that makes it hard for a person to work, go to school, and carry out usual everyday activities (Söderlund, 2014).

The Brain and Mood Regulation

Young (2015) discusses a study about what amygdala activity occurs while recalling autobiographical memories in depressed individuals. This study was conducted to discover a potential cause for the negative bias depressed individuals have when recalling autobiographical memories. For this study, individuals had to think of autobiographical memories when they were presented with an emotional cue word. These words could be positive, negative or neutral cue words. Participants had to think of seven different examples of autobiographical memories relating to the cue word.

Young (2015) discusses how the results of the study showed that positive recall for depressed individuals created a great decrease in amygdala activity in the left side and lower association with areas apart of the salience network. The salience network is a circuit in the brain that identifies whether positive or negative autobiographical memories obtain the most attention in a person. Depressed individuals had more amygdala activity and a higher association with the salience network in regards to remembering more negative autobiographical memories. This meaning that depressed individuals were seen to pay more attention to negative autobiographical memories for their salience network.

Young (2015) discusses that for non-depressed individuals, amygdala activity lowered for negative autobiographical memories. This means that non-depressed individuals were seen to pay less attention to the negative memories and more attention to the positive memories. These results can conclude that amygdala hyperactivity that occurs in the left side tends to appear when depressed individuals are remembering negative autobiographical memories. On the other hand, when depressed individuals recall positive autobiographical memories, amygdala hypo activity could occur.

Link Between Major Depressive Disorder and Autobiographical Memory

Dalgleish (2014) discusses how being diagnosed with major depressive disorder can affect a person's autobiographical memory. This mental disorder can change how autobiographical memories are recalled, represented and retained. One main effect depression can have on memory is that it is hard to access positive memories. Even when a person can think of positive autobiographical memories, it can have little to no good impact on a person diagnosed with depression. Depressed individuals may even get upset thinking about positive memories because they tend to think of these memories as happier times they can never get back. Because of this, depressed individuals do not want to think about positive memories because it just results in them feeling more upset. Positive memories tend to get repressed and forgotten because of this. Therefore, it is hard for depressed individuals to access positive memories when they are asked to.

Dalgleish (2014) discusses another main effect depression can have on memory which is that there is an existing bias for people diagnosed with major depressive disorder to specifically remember negative things. This bias exists because depression tends to favor thinking about negative things a person experiences instead of the positive ones. Also, people with depression are more likely to remember negative memories when they are asked to think about an autobiographical memory. This is because positive memories are repressed and therefore, positive memories tend to be forgotten.

Dalgleish (2014) discusses two more main effects depression can have on autobiographical memory. A third main effect depression can have on memory is that it can damage memory processes relating to a person thinking deeper about their own personal autobiographical memories. This can happen because recollection of certain autobiographical memories can be emotionally distressing for those suffering from depression. This can cause

them to suppress memories to avoid experiencing the negative emotions that may be related to them. Lastly, a person with depression may not be able to think of specific details relating to their autobiographical memories. This can happen because of repression of autobiographical memories. For instance, if a person was asked to think about a birthday party, they would think more so about how they hosted the party as opposed to specific details about the party. A person with depression could think about how every party they had ended up being a disaster instead of thinking of what the party was for, when it took place, and who was there.

Word Cues Versus Picture Cues

Ridout (2016) discusses one study that has been conducted to see how picture cues can affect how well depressed individuals recall autobiographical memories. Researchers wanted to determine if picture cues reduce recall of negative autobiographical memories like word cues do. Also, they wanted to see if picture cues changed how a depressed individual interprets an autobiographical memory. For this study, both word and picture cues were used in two separate versions of the recall test to see potential differences that can arise. Two groups of participants were used for this study with one group being depressed individuals while the other one was a control group of non-depressed individuals.

Ridout (2016) discusses how this study concluded that depressed individuals did not retrieve nearly as much specific autobiographical memories as the control group did. This occurred because when depressed individuals recall autobiographical memories, they tend to forget about key details relating to the event. However, depressed participants did retrieve a larger number of categorical autobiographical memories than the control group. This occurred because depressed individuals tend to think more about how they felt during a memory instead of what was happening during the life event. For instance, a depressed individual is more likely to

think about how devastated they felt about failing a physics test then about the content in physics the test was assessed on. Therefore, depressed individuals are more likely to organize different memories into categories such as the devastating memories category and the heartbreaking memories category. This conclusion can verify that people with depression have an over general memory type that exists with both word and picture cues. It also verifies that depressed individuals tend to think about the emotions involved with a life event instead of what specifically made them feel that way during the event.

Depression and False Memories

Howe and Malone (2011) describe the Deese/Roediger-Mcdermott paradigm as a methodology used for looking at the development of false memories. The goal of using this paradigm for this experiment was to look at the relationship between recollection of memories and major depressive disorder. Recall tests were used because they help show how a person's thought process is presented in their mind. For instance, the tests can show if the person is interpreting an event as a good or bad event. Also, recall tests can show various ways depression can impact a person's memory for those diagnosed with this disorder. One way depression may influence a person's autobiographical memory can be shown through an individual's heightened cognitive load set on recollection of different memories. A depressed individual may experience a heightened cognitive load because they have more anxiety and a lower self-esteem than others. This meaning that they tend to overthink about things a lot more than non-depressed individuals.

Howe and Malone (2011) discuss how experimenters compared recollection of false and real memories for their research. The task of this experiment was for participants with major depressive disorder as well as participants without it to look at different word lists that had a familiar topic. Later, participants were asked to recall as many of the words as they could. As a

result, participants could remember words, however, some participants falsely remembered words that were not even shown to them on a list. Once this task was completed, participants then completed the Beck Depression Inventory Two and a series of questions about their mental health history.

Howe and Malone (2011) concluded that participants with major depressive disorder had more frequently occurring false memories than those without major depression. This could have happened because the words shown could have altered how the participant thought the event happened. As for the word list, it was noticed that major depressive disorder diagnosed participants had more false memories with the words that were specifically depression-relevant such as crying, sadness and pain. However, these participants correctly remembered the depression-relevant and negative-relevant word lists better than the other word lists presented in the experiment.

Howe and Malone (2011) also concluded that impacts on episodic memory can occur, but the impact is not a consistent one. Words that are negative like sadness, crying and tears can help participants with major depressive disorder think about more negative words such as fire and violence. This can alter their memory because they are depressed and these negative words can give these participants less cognitive control. Less cognitive control could occur because false memories are associated with poor working memory. Since a lot of major depressive diagnosed participants have a lot of false memories, their working memory might not be as great as the other participants which leads to less cognitive control.

Howe and Malone (2011) discuss how this evidence does show that those with major depressive disorder may have some impairments in their memory compared to other participants. Those diagnosed with major depression that are having false memories could be a bad thing

because it could give them a potential negative and false outlook on different events experienced. These potential feelings and outlooks should not even exist and be an issue because they are not real. However, these feelings and outlooks could affect events and different relationships the depressed individual has that should not even be affected. If false memories were not able to be created in a depressed individual, it could make it so a person always understands how they should feel about events and people.

Autobiographical Memory's Connection to State of Mind

A person's overall state of mind will generally impact a person's emotions. This means how a person thinks about the world will determine how they feel in life and what emotions they will experience. Howe and Malone (2011) discussed that a person's state of mind could have an impact on other things as well such as making choices, attention, and memory. Mental disorders such as major depressive disorder can be connected to changes in how the brain processes things that are specifically related to emotions. This is because of how negative thoughts could impact and override the brain of a depressed individual.

Howe and Malone (2011) have also stated that the different characteristics a person has such as having a high self-esteem can connect to how well a person is motivated to do well in life. For example, a person who thinks they can do great on a math test most likely will do great on the test. The different characteristics a person has could also play an important role in remembering for memories (Howe & Malone, 2011). This plays a role because people with major depressive disorder tend to have lower motivation levels than people without major depressive disorder. These low motivation levels could make it so that people with major depressive disorder are more likely to do poorly on tasks than others. This is because people with

major depression do not want to make the extra effort to remember things, such as studying information for an upcoming test, like people that have a higher motivation level.

Howe and Malone (2011) conclude with these factors considered, there are many differences between diagnosed major depressive disorder individuals and non-depressed individuals in regards to their state of mind. Depressed individuals are more likely to be unsuccessful because of low motivation levels, poor decision making, poor attention and low self-esteem. As for non-depressed individuals, they are more likely to have success because of more positive emotions experienced, higher self-esteem, better attention, better decision making and higher motivation levels.

Interventions/Therapies

Interventions are important to discuss because depressed individuals want to know how to cope with the potential negative changes the depression can create to their autobiographical memories. Generally, people want to see most of their autobiographical memories in a positive light. No one wants to focus on the negative aspects of the event. Also, a person does not want to have a false negative memory about the event because this can lead them to be unsure of what to believe is real and fake about the life event. Different interventions and therapies can help depressed individuals identify what can be done about the potential negative changes depression can have on their autobiographical memory. Also, interventions can help depressed individuals focus on the positive aspects of their autobiographical memories and help them recall more positive memories.

Recall of Positive Memories in Depressed Individuals

Joormann (2007) discusses the number of positive memories an individual could have based on their mental health history. This was considered because experimenters had the idea that individuals without depression recall more positive memories than depressed individuals. Experimenters believe this because depressed individuals experience a lot of negative thoughts that can enter their mind. These negative thoughts they have can make them focus on the negative aspects of an autobiographical memory instead of the positive aspects. Positive memory recall was tested by an experiment that was conducted with three different groups of participants to see how participants recall positive autobiographical memories. The three groups of participants included one group that had major depressive disorder, another group of participants that had once been diagnosed with major depressive disorder, and the last group was of participants who have never had major depressive disorder.

During the experiment, participants were asked to complete several different tasks. All participants completed the Beck Depression Inventory and a mood induction task. The mood induction task consisted of creating a sad mood for the group of participants that never had depression and the group that had depression in the past. To create a sad mood, the participants were asked to watch a movie showing a student's suicide. The other group of participants that were diagnosed with depression watched a neutral movie instead about nature. As all the participants were watching their version of the movie, the participants were asked to think about how they feel about the movie and recall details about the movie (Joormann, 2007).

When the experimenter asked the participants to remember positive memories about themselves, the participants under the never-depressed group mood overall improved. As for the formally depressed participants, their moods did not get better or worse. For the depressed participants group, their mood became worse once they recalled the memories. This could be

because the thoughts about positive memories for them can lead to depressed individuals to think negatively. This is because the tendency for those with depression is to think negatively (Joormann, 2007).

All three of the groups that were tested ended up having the same number of positive memories they could remember. For the participants tested with the nature scene, they could remember the positive music that was presented during that scene and positive visual images these participants saw in the movie. For the participants tested with the suicide scene, they could remember positive prevention methods used to help prevent future suicides. Also, they could remember the different positive support the student was receiving who committed the suicide (Joormann, 2007).

Even though the same amount of positive memories were remembered for the different groups of participants, there are still differences in people who have depression, those who used to have depression, and those who have never had depression in mood regulation. This is because of the variation in cognitive processing for each person. This means that for depressed individuals, they still tend to have more negative thoughts take over their mind than non-depressed individuals. Even though many negative thoughts can enter the brain for depressed individuals, Joorman, (2007) overall concludes that the amount of positive memories recalled does not differ in depressed and non-depressed individuals.

Positive Memories Restoring Negative Moods

Foland (2014) discusses the concept of positive memories restoring negative moods. Foland explains how it is difficult for major depressive patients to restore their moods with these positive memories because of the great likelihood of patients to relapse back into a depressive

state in a short amount of time. This study examined both depressive-diagnosed and non-depressive-diagnosed individuals by looking at neural correlates relating to the difficulty of using positive memories to create a happier mood in depressed individuals. Functional magnetic resonance imaging was incorporated into this experiment to look at participants while they were inducted with a sad mood. Functional magnetic resonance imaging was also incorporated once participants returned to a normal mood through recollection of various favorable autobiographical memories.

Foland (2014) explains that the sad mood was induced because experimenters wanted to see how recollection of different memories can occur in participants. They ultimately wanted to see if they could figure out why it is difficult for mood regulation to stay consistent for patients with major depressive disorder. Results of this experiment showed that recall of positive memories led to a better mood for all participants. However, this better mood did not last and experimenters did not understand why.

Foland (2014) discusses how experimenters started to understand why this occurred once other results for the experiment showed that by using functional magnetic resonance imaging scanning, it was determined that left ventrolateral prefrontal cortex plays a crucial role for this difficulty in retrieving positive memories for depressed individuals. Functional abnormalities and reduced activation were discovered in this region of the brain for patients with major depressive disorder. It was also found that there are abnormalities in the activation of the cuneus for those with major depressive disorder. These two parts of the brain play a large role in recollection of any autobiographical memory. Therefore, this could explain why it is hard to use positive autobiographical memories to restore mood for patients with major depressive disorder.

Cognitive Bias Modification for Interpretation

Joormann (2015) discusses cognitive bias modification for interpretation as an intervention strategy to change how depressed individuals favor negative aspects of autobiographical memories over positive ones. Investigators have considered this because patients with major depressive disorder have the known bias of seeing things that are open to interpretation in a negative light more so than a positive light. This is because of negative thought patterns that usually occur when a person is diagnosed with major depressive disorder. Investigators wanted to try to see if they could change these negative views into more positive ones (Joormann, 2015).

Joormann (2015) discusses how investigators wanted to see if they could use a cognitive bias modifier as an intervention strategy to change the way patients with major depressive disorder interpret memories and life events. They wanted to do this to help patients regulate their emotions and to try to reduce major depressive symptoms in patients. The cognitive bias modifier for interpretation has been used to determine if changes in interpretation occur in patients when they are asked to think of positive aspects of an autobiographical memory instead of the negative ones. They examined this idea by having participants complete a mood questionnaire, the Beck Depression Inventory-2, a mood induction task, a distraction task and an autobiographical memory task. The mood and beck questionnaire were completed at three different points in the study.

The mood and Beck Depression Inventory questionnaires were completed before and after the mood induction task and after the recall or distractor task. These questionnaires were included because the experimenters wanted to see how the participants' mood was affected after these tasks. The mood induction task included the experimenters showing a movie clip to help create a sad mood in participants. However, for major depressive disorder participants, they

watched a movie clip that did not induce a sad mood because of already being in a sad mood. So instead, participants with major depressive disorder watched a neutral mood inducing movie clip of a nature scene and were asked to see how that would affect their mood (Joormann, 2015).

The distraction task was used so that participants would not focus on how they are currently feeling. Experimenters showed participants different words and were told to create smaller words out of the words that were presented to them. For the autobiographical task, participants had to think about happy occurrences that happened during high school. This was done so experimenters could see how well each participant could recall happy memories from a specific point in their lifetime. Results have shown that the modifier affects stress response, memory, and interpretation (Joormann, 2015).

Joormann (2015) explains that in the current study, the results showed that the modifier had been effective in changing the interpretation for those with major depressive disorder. However, these changes in a person's thought process could lead to potential effects on a person's memory. For instance, how they remember an event. An event could be recalled incorrectly from the use of the modifier. This can occur because of the way the brain operates. Having someone try to change the way a person thinks about a memory could cause anxiety on a person. This is because this can make it harder for them to understand what aspects of their memories are true and false.

Joormann (2015) discusses how cognitive theories believe that the way a person sees a situation can overall impact what emotion can occur. Therefore, experimenters using the modifier have the capability to influence patients with major depressive disorder to be in a more positive or happier outlook about different events that have occurred in their life. This is because the patients that undergo the modifier treatment may see things in a better light than they had

before. Therefore, when an experimenter can change the thought processes of a depressed individual, this can influence a person's emotions to change.

Depression and Recollection of Public Events and Statistics

Söderlund (2014) discusses the relationship between patients with major depressive disorder and their remembrance of public events. Patients with major depressive disorder are said to have poor memories relating to different events that happen to them and events that happen around them as well. Instead, they remember things in a more general sense and tend to think of different events in a symbolic way. This means they do not know the very detailed aspects of the event happening in the world. They just have a very basic knowledge of what it is like if it is a good thing happening or a negative thing occurring in the world. Despite researchers' knowledge of patients with major depression not remembering that many details about autobiographical memories, experimenters still debate if this is due to impairment in a patient's autobiographical memory. Also, if it is due to impairment, experimenters still question what causes the impairment.

Söderlund (2014) discusses how researchers conducted an autobiographical interview to determine the strength of both semantic and episodic parts of autobiographical memory. The autobiographical interview is when researchers ask participants of the study to think of memories when they are given an emotional word. It is an important tool researchers have used to assess autobiographical memory in different groups of people. First, participants were asked to think of their own personal memories once the emotional word was presented. Afterwards, participants were tested on their knowledge of celebrities and different events that are happening all around the world. Researchers also tested a sample of people that were not diagnosed with major depressive disorder to compare the differences in autobiographical memories.

Söderlund (2014) discusses for the public events interview, participants selected a word from a list to use as a “cue” word and were asked to think of world and historical facts rather than different facts about events that happened in their life. The different world and historical facts participants were asked to think about was how they found out about the event that was happening in the world. Once participants thought of that, they were asked to think about who was involved, where the event was, when it took place, etc. Lastly, the famous names test was done in the experiment. A list of various celebrities was presented from different time periods. The participants were asked to describe how the person was famous such as if they were a famous athlete, a famous singer, a famous actress, etc.

Söderlund (2014) discusses that researchers found that there was some impairment in the episodic aspect of autobiographical memory for those with major depressive disorder. This was because those with major depressive disorder did not remember some key details relating to the autobiographical memories about themselves they were trying to recall. However, there was no impairment for a patient’s semantic part of their autobiographical memory. This means that those with major depressive disorder were generally able to remember events and specific details about the different events that are occurring around the world. There were hardly any specific details that were forgotten about the events happening around the world by those with major depressive disorder.

Söderlund (2014) discusses that for those who did not have the best knowledge about what was happening around the world, this was probably because they did not listen to the news as much as others who are not diagnosed with major depressive disorder. For the study, measurement of how much both depressed and non-depressed individuals listened to the news was measured to discover this fact (Söderlund, 2014). Although some patients with major

depression had trouble with world events, they did not seem to have trouble with their knowledge of different celebrities. The results of this study could conclude that there is some impairment in both the episodic and semantic parts of the autobiographical memory of a patient with major depressive disorder.

Conclusion

Overall, with all the previous literature considered, major depressive disorder is a mental disorder that can greatly impact how a person thinks and recalls. It can change how the brain is structured and functions overall because of the negative influence it has on it. This negative influence can create an impairment of retrieval and recall of autobiographical memories for depressed individuals as well. Therefore, major depressive disorder has a strong influence on a person's autobiographical memory. A person with major depressive disorder can lose key details to autobiographical memories because they think about these memories with their emotions. This meaning that they tend to put these memories in different categories such as events that made them feel sad and events that made them feel angry.

Being diagnosed with major depressive disorder has a great effect on the brain. One of these effects is changing amygdala activity when retrieval of various autobiographical memories occurs. Major depressive disorder can also damage a person's memory system which can lead to different recollection of autobiographical memories for depressed individuals versus non-depressed individuals when both word and picture cues are presented. This damage in a person's memory could also create more false memories for depressed individuals than non-depressed individuals. This is because depressed individuals are more likely to forget more about the specifics about a life event. A third consequence of damage to the memory system as well as the

brain for depressed individuals is their state of mind could be impacted. This state of mind meaning that the way they interpret life events can influence what emotions they experience.

Many different studies have been conducted as attempts to resolve issues and underlying causes of the poor recall of autobiographical memory for depressed individuals. For instance, different studies assessed how well both depressed and non-depressed individuals recalled positive autobiographical memories. Also, Foland (2014) assessed the idea that positive autobiographical memories could be utilized to create a happier mood for depressed individuals. Another treatment method that was discussed was the cognitive bias modifier. Joormann (2015) discussed how experimenters wanted to see if they could use this modifier to change how depressed individuals interpret life events. This treatment was successful, however, there still could be potential effects on a person's memory because of using this treatment.

Lastly, Söderlund (2014) discussed how well those with major depressive disorder recall public events and statistics. This study showed that public events were not recalled well while various celebrities were recalled well. Therefore, this study can show that some autobiographical memories and knowledge a person has could be remembered well, while other autobiographical memories and knowledge could contain some missing information for those with major depressive disorder. While some studies have addressed potential causes and solutions, others still leave people questioning about what can be done to address the negative effects major depressive disorder could have on autobiographical memories.

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