Evaluating the Longevity of Disruptive Mood Dysregulation Disorder (DMDD)

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Abstract

The DSM-5 now recognizes DMDD (Disruptive Mood Dysregulation Disorder) as a separate Childhood and adolescent diagnosis than Bipolar Disorder (BD). According to (Kavoor & Mitra ,2015), we hypothesized that the onset of Bipolar Disorder in adolescents is a misdiagnosis with DMDD serving as a better classification for the different symptomology. We also hypothesized that Disruptive Mood Dysregulation Disorder may only serve as a temporary diagnosis until further research is done on the alternative classifications. Discussions were based on the history of BD disorder as well as research behind the differences in symptomology, current classification, comorbidity and treatments to determine if DMDD can serve as a temporary diagnosis or one of permanence which accurately explains, diagnose, and treats new signs of adolescent variance from the typical BD diagnosis. Affirmation of the hypothesis is then presented and the analysis concludes with encouragement of more research for treatments that avoids creating more harm.

Keywords: BD, DMDD, treatment, comorbidity, research, DSM-5

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In as much as irritability and temper are not considered common among young children, their intensity and chronicity beyond development norms can be challenging to parents, patients, as well as those working with children. Currently, according to a report by (Baweja, Mayes, Hameed, & Waxmonsky, 2016), severe irritability among the main reported reasons as to why children are put under psychological health services. The report also outlines some cases of behavioral and emotional dysregulation among the young people seeking mental health services. Symptoms of these disorders may manifest in several ways including limited attention hyperactivity and bipolar disorders and also the depressive disorder. Following the challenge - which was presented by these arrays of mental health problems- a new category of diagnosis was induced in the DSM-5, Disruption Mood Dysregulation Disorder DMDD. This was to help curb the reported rising cases of the disorders (Roy, Lopes, & Klein, 2014). Despite being controversial as pointed out by some media sources, clinicians and researchers, empirical research has found that DMDD has varied outcomes with regards to development, distinct etiology, and distinctions in neurobiology from oppositional defiant disorder (ODD), attention-deficit hyperactivity disorder (ADHD), and pediatric bipolar disorder (Roy, Lopes, & Klein, 2014).

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Background

DMDD (Disruptive Mood Dysregulation Disorder) is a condition among children often characterized by extreme anger, irritability and regular anger outbursts. However, its symptoms extend beyond sullenness to severe impairment often with the necessity for medical attention. As per the DSM-5 2013 manual, DMDD is a new condition with its first appearance in the Statistics manual in 2013 (Nimh.nih.gov, 2018). The vast amount of information on the condition come from studies regarding the severe mood dysregulation even though the limit of age placed on its onset differs between severe mood dysregulation (12 years), and DMDD, which is normally prevalent from ten years (Zepf & Holtmann, 2012). Certain studies have also scrutinized the solidity of DMDD with an increasing time span. The results of such studies have indicated higher stability in childhood than during teenage years. Previous study outcomes also demonstrated that over 80% of children who met the DMDD criteria when they were 9 years old also met similar criteria at the age of six (Mikita & Stringaris, 2013). By contrast, another study diagnosed cases with severe mood dysregulation and established that less than half of the total population sampled met the criteria during the follow up process. It was also important from previous studies that children who were diagnosed with DMDD, at the age of six, had higher risk of suffering from attention-deficit hyperactivity disorder by the time they celebrated their ninth birthday (Ryan, 2013). Such children also have high risk of disruptive behavior disorders. The status of DMDD in childhood also indicates subsequent problems in peer relationships, victimization such as bullying, and increased exclusion of peers. Background studies' also reveal that during the stage of late childhood, the diagnosis of DMDD among the teens predicted subsequent challenges in young adulthood. Compared to a psychiatric comparison group and

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non-cases, those who met the DMDD criteria were at higher risks for sexually transmitted diseases, no college attendance, not achieving high school diplomas, poverty, police contact, nicotine use, and not limited to other non-substance-related psychiatric disorders (Mikita & Stringaris, 2013).

Statement of purpose

Bipolar Disorder (BD) has been classified by the *Diagnostic and Statistical Manual of Mental Disorders (DSM-5)* guidelines as a disorder which presents episodes of mania and vast depression (Baweja, Mayes, Hameed, & Waxmonsky, 2016). The regularity of mania and major depression episodes typically happens four times within a single year for an adult. However, within recent years, researchers and practitioners have noticed that young children, particularly those under the age of 12, who were diagnosed with Bipolar disorder, showed different symptoms (American Psychiatric Association, 2013). Specifically, the frequency of the disorder was more periodic and seemed to consist of severe episodes of cycling, depression and mania. Because of the striking differences between childhood symptoms and those reflected in adulthood, the validity of the disorder was called into question when diagnosed in children. Controversy surrounding these differences and possible misdiagnoses led to the addition of a new disorder, Disruptive Mood Dysregulation Disorder (DMDD), now appearing in the latest revision of the DSM-5 (American Psychiatric Association, 2013). The recent DSM-5 now recognizes DMDD as a separate disorder from the bipolar spectrum. The purpose of this capstone project is to investigate the issues, which led to the creation of a new disorder, DMDD, used when diagnosing children and adolescents who were previously diagnosed with bipolar spectrum disorder. Are these distinct differences in symptomology a means of misdiagnosis? And if so, does the current classification of DMDD serve as a place holder until more

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information is developed? Or is the new classification one of permanence that accurately explains, classifies, and allows for treatment of these new signs of children and adolescents variance from the typical bipolar spectrum diagnosis.

Research Question

Is Disruptive Mood Dysregulation Disorder or DMDD in the DSM-5 an improvement over diagnosing BD in children and adolescents? If so, is DMDD a better classification for the irritability and mood symptomology seen in children and adolescents?

Hypotheses

1. Developmental considerations in childhood and adolescence make it difficult to apply diagnostic criteria for Bipolar Spectrum Disorders, and as such, DMDD is a diagnostic construct created to increase diagnostic reliability and validity.
2. DMDD bridges the gap and is an improvement in dealing with children and adolescents who display chronic irritability and mood disturbance.

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LITERATURE REVIEW

Why we classify and how classification drives treatment and research

The main reason for classification of mental illness includes its ability to serve as a means for researchers and clinicians to describe, predict outcomes, determine treatment, and continue ongoing research into cause and reason behind disorders (American Psychiatric Association, 2013). Nevertheless, Classification also presents a universal way to diagnose. Even in this age of advanced technology, we still lack the capability to universally diagnose psychiatric illness with objective testing. Therefore, psychiatrists rely on the symptoms reported by patients and their own observations to make a diagnosis (Regier, Kuhl & Kupfer, 2013). Through this judgement, clinicians can describe, compare and predict the patient's symptoms with the standardized lists of symptoms and criteria contained in a diagnostic manual such as the DSM-5 statistics manual (Regier, Kuhl & Kupfer, 2013).

The DSM uses symptom-based criteria, which have been formulated by expert committees and went through the process of testing in order to generate how well the criteria define diverse groups of patients (Regier, Kuhl & Kupfer, 2013). However, it is noted that criteria for most disorders may be prone to change with time owing ongoing researches on new diagnostic and test measures. As such, reviews and revisions of the DSM is always mandated at any given moment.

The use of the DSM provides the necessary standardization of diagnostic categories for psychiatric research and treatment. Before the use of the DSM, there were many significant disparities in the way particular diagnoses were handed out (Regier, Kuhl & Kupfer, 2013). These disparities made clinical diagnosis unreliable and advances in psychiatric research very

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difficult. However, with the introduction of the DSM, not only was unity built amongst clinicians and researchers in terms of diagnosing but also insurance companies, who were also able to require diagnoses, using specific criteria from the DSM, to match reimbursement categories (Regier, Kuhl & Kupfer, 2013).

In classification, health professionals such as psychologist, psychiatrist, and clinicians use the *Diagnostic and statistical Manual of Mental Disorders* (DSM), which serves as a reference for all health providers to diagnose any existing psychological disorder (Regier, Kuhl & Kupfer, 2013). The DSM is commonly revised in order to provide up to date classifications and cover any new or previously missed diagnosis (Regier, Kuhl & Kupfer, 2013). The most current edition is known as the DSM-5.

Classification criteria for the previous version of the DSM-IV-TR include several different axes. These axes include: Axis I, which records the patients' primary diagnosis; Axis II, which records long standing personality; Axis III, accounts for any medical conditions that might affect the patient psychologically; Axis IV, records any significant psychosocial or environmental problems experienced by the patient, and lastly Axis V, which records an assessment of the patients' level of functioning (Regier, Kuhl & Kupfer, 2013). These axes in the newest DSM-V is listed on a single axis. The new approach combines what was previously known as Axes I, II and III with separate notations for psychosocial and contextual factor's, which use to be Axis IV, and Disability, which was formerly axis V.

Criteria for diagnosing BD based on the DSM-IV-TR

The difference between Bipolar I and Bipolar II disorder are not very apparent. The mania symptoms that define Bipolar I and hypomania defining Bipolar II are practically the same, with the main difference resulting from the impairment related with mania and the

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availability of psychosis in mania (Benazzi, 2007). Mania in bipolar I may be adversely severe requiring hospitalization.

As per the *DSM-IV-TR (2000) 4th ed* definition, Bipolar II is defined as recurring occurrences of hypomania and depression. Hypomania on the other hand, as per the DSM-IV-TR (2000), requires high levels of irritable and euphoric mood, in combination with any of the following three symptoms: Decreased sleep necessity, distractibility, increased talk, grandiosity, over activity, extra like for risky activities and racing thought. Four among these symptoms have to be present if only mood is irritable.

Two subtypes of BP-II are a 'sunny' one (Benazzi, 2007), associated with high-functioning hypomania and low episode instability; and a 'dark' one (Benazzi, 2007) characterized by frequent and brief hypomanic episodes with irritability and risky behavior, as well as high episode instability. Compared with BP-II without cyclothymic temperament, BP-II with cyclothymic temperament consist of more axis I comorbidity, suicidality, substance abuse and risky behaviors (Benazzi, 2007).

Manic-depressive disorder has three basic domains in the DSM-IV-TR, which include: 1) increase or decrease of excitement or inhibition of mood; 2) increase or decrease thinking; and 3) increase or decrease activity. The domains may move in the same direction, in which case would lead to manic/ hypomanic states or depressive states; or could move in opposite directions, leading to mixed states (Benazzi, 2007). Manic and depressive combined situations consist of a combination depressive symptoms and hypomanic and manic symptoms in the same episode, with a basis on the main domains. When concerning the domains there is no ranking order in terms of importance (no domain is considered more important than the other).

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DSM-IV BD (Bipolar Disorders) other than BP-I and BP-II also includes the Bipolar and cyclothymic disorders which often involve recurrent hypomania alongside raoid cycling which perceived as sections of the 'bipolar spectrum' (Benazzi, 2007). The *DSM-IV-TR (2000) manual 4th ed,* includes the four diagnoses of BP–I, BP–II, cyclothymia, and BP–NOS, identifiable by symptom severity and frequency (Lofthouse, Fristad, Splaingard, & Kelleher, 2007). BP–I is characterized by at least one manic episode, with major depressive episode sometimes being a factor (does not necessarily have to be factor). BP–I may further be specified by stating the nature (manic, hypomanic, depressed, or mixed) of the current and previous mood episodes. BP–II is indicated by the incidence of hypomanic and depressive episodes, without any history of a manic or mixed episode; cyclothymic may not be as severe compared to either BP–I or BP–II, although is adversely chronic, lasting for at least 1 year or more in adolescents and children (Lofthouse, Fristad, Splaingard, & Kelleher, 2007). A very important focus of much research has mainly concerned BP-II and bipolar spectrum and its foresight in children and adolescents. Prevalence of bipolar disorder during the DSM-IV era was around 6%, with 2-15% in clinical disorders found in children and adolescents. Often in the case of children and adolescents experience are often with mixed states, and very high rapid cycling. The symptoms are often diagnosed as attention-deficit hyper- activity disorder (ADHD) and major depressive disorder (MDD), leading to the use of stimulants and antidepressants instead of mood-stabilizing agents, which may worsen bipolar disorder if wrongly diagnosed (Benazzi, 2007).

Prevalence rate of childhood onset of BD

As per the *DSM-IV-TR (2000) 4th ed,* 2.9% of adolescents were found to have Bipolar Disorder while another 2.9% were found to be having severe impairment based on the criteria from the manual. According to gender, females had a higher BD prevalence at 3.3% compared to

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that of males which stood at 2.6%. There is however much concern that the prevalence rate of childhood onset of Bipolar Disorder is too far in favor of early diagnosis (Jenkins, Youngstrom, Youngstrom, Feeny, & Findling, 2012). Clinical diagnoses of pediatric bipolar disorder (PBD) have shown to have increased drastically in the United States in recent years (Blader & Carlson, 2007), with some estimates showing as much as a 40 percent increase in classification over the past decade (Jenkins et al., 2012). Evidence supports research on the validity of diagnoses of bipolar disorder regarding phenotypic, genetic, structural, functional, neurocognitive, and treatment response similarities to bipolar disorder in adults (Jenkins et al., 2012). However, public health and consumers question whether the research diagnoses and clinical diagnoses identify the same cases (Jenkins et al., 2012).

The prevalence rate of childhood onset of Bipolar Disorder has a strong association with family history. Psychiatric illness and difficulty in childhood (combined) have a strong influence on age of onset of bipolar disorder (Post et al., 2016). With strong evidence behind family history and difficulty in childhood increasing BD onset, these variables should be considered in risk assessments for BD onset in different populations (Post et al., 2016). The need for early intervention and prevention should also be a crucial focus in research studies of BD due to the rapid diagnoses to eliminate the harsh reality of providing treatment for those who are misdiagnosed. Mood swings are normally seen among teenagers as they grow through adolescence. When the mood swings are not controlled, the feeling might persist and ultimately interfere with the ability of the child to function appropriately in his or her daily life hence, causing bipolar disorder. Also, termed as manic-depression, bipolar disorder affects the mood of an individual leading to extreme changes in mood, behavior, as well as their energy levels (Johnson et al., 2012).

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At times, bipolar disorder symptoms can be seen during early childhood, though in most cases it emerges during adolescence and adulthood. Only a fraction of the cases suffering from BD have been diagnosed with the disorder, while a very large percentage is suffering from the early onset of the disorder but has not been identified. A key reason for this the broadness of the patterns often put in consideration when diagnosing the disorder since its symptoms represent in many patterns and for that occur over time. Furthermore, the disorder in most cases often coexist alongside other psychiatric conditions like unipolar disorder (Latalova, Prasko, Diveky, & Velartova, 2011). As such, it upon the medic to sort out each of the symptoms associated with each disorder while also putting in mind the possibility of potentiation among the symptoms.

From the classification of mental illnesses that are usually done, there could be a high likelihood of wrong grouping of this disorder (placement in a different categories of disorders, misdiagnosis). In several instances, the early onset of this disorder has been confused with depression among children. Children having BD often alternate quickly between mania, which is characterized by extremely high moods, and depression, which is associated with low moods (Levinson & Young, 2013). The shifts in the moods can produce irritability with wellness periods in different episodes. There is also the possibility that the young child may experience both extremes concurrently. Parents having children with BD often perceive them as unpredictable, withdrawn, and alternating between silly or aggressive (Levinson & Young, 2013). It is also important to add into account that children suffering from BD also are at higher risk of suffering from attention-deficit hyperactivity disorder or anxiety (Levinson & Young, 2013). The two mentioned disorders, also termed as “co-occurring” and complicates the process of diagnosing BD thus contributing to the lack of recognition of the illness among younger populations (Ruggero, Zimmerman, Chelminski, & Young, 2010).

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History of classification of children with BD

Bipolar disorder was never historically meant to be witnessed in children and adolescents and in many presented cases it rarely was. However, over the past decade, a substantial increment in adolescents and children being diagnosed with the disorder have currently become evident over the past decade.

Even with allusions to symptoms of bipolar stemming as far back as 1679, progressions in bipolar disorder classification mainly took place in the 19th century. The first leading case was in 1851, where a new classification to BD was developed. During this period, a French psychiatrist by the name of Jean-Pierre Falret theorized bipolar disorder as being cyclical in nature, referring to it as a circular madness (Renk et al., 2014). For madness, Falret stated that manic and melancholic episodes were separated by symptom-free intervals (Renk et al., 2014). By 1854, another French psychiatrist by the name of Jules Baillarger supported the cycling of mania aspect of Falret's theory however, without the presence of symptom-free intervals (Renk et al., 2014). Even with slight disagreement between Falret and Baillarger on the nature and cyclical of bipolar disorder, both did agree that diagnosis of the disorder was terrible and unfortunate, with the possibility of a cure unlikely.

For children and bipolar symptoms, Adolf Meyer, Karl Abraham, and Melanie Klein were some of the first psychoanalytic theorists in the field to recognize manic-depressive symptoms in children (Renk et al., 2014). Child psychiatrists examined bipolar symptoms in their patients and looked for similar symptoms as presented and witnessed in adults. With time, case studies emerged and conluded that bipolar symptoms in children were uncommon and if apparent, the symptoms would generally not occur until late adolescence (Renk et al., 2014). Other psychiatrists however, believed that mania was being overlooked in children mainly due to

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the overlap and comorbidity between manic symptoms and those of other disorders such as attention-deficit/hyperactivity disorder (ADHD) (Renk et al., 2014). Even as early as the 1920's group studies and other studies of bipolar symptoms in children were conducted with findings and systemic review of the literature concluding that manic depression was uncommon in childhood (Renk et al., 2014).

By the 1970's, interest in understanding and identifying bipolar disorder in children brought upon a rebirth of the topic. Individuals such as Weinberg and Brumback developed criteria for diagnosing mania in children (Renk et al., 2014). These criteria included symptoms of euphoric or irritable mood, hyperactive behavior, and flight of idea and were used for the *DSM-III* bipolar disorder criteria. Since 1980, the *DSM* criteria also specified that adult criteria could be used to also diagnose mania in children, with certain modifications based on age and developmental stage (Renk et al., 2014). By the early 1980's, the idea of bipolar symptoms being present in children increased and with it came acceptance. Researchers such as Carlson proposed that children with mania should be described as presenting such symptoms as: hyperactivity, absence of discrete episodes, more irritability and emotional lability than euphoria, and lack of paranoia or grandiosity (Renk et al., 2014). Children experiencing the depressive phase of the disorder were predicted to present specific depressive episodes. However, these children were described as agitated or irritable in the same manner as children with unipolar depression (Renk et al., 2014). Children older than 9 presented more classic pattern of symptoms, which were marked by discrete episodes, euphoria, irritability, and grandiosity (Renk et al., 2014).

In the early 1970s, structured and semi-structured interviews were developed (Renk et al., 2014). Researchers began to utilize more of the standardized criteria for diagnoses, using symptoms presented in the *Research Diagnostic Criteria* and the *Diagnostic and Statistical*

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Manual of Mental Disorders. By 1987 bipolar disorder became symptom driven with increased importance aimed at defining criteria. On the other hand, bipolar disorder in the *International Classification of Diseases (ICD)* classified the disorder in broader terms and focused on the entire picture of episodes and course of the illness (Renk et al., 2014).

Effectiveness of treatments

Just like diagnosis of BD is still a key challenge, delivering its treatment also stands a major challenge for medics. Despite the great progress in psychopharmacology, there still lack options and satisfactory results in the line of treatment. With a high relapse rate and difficult side effects, current research is now focusing on relapse prevention and long-term stabilization as well as new pharmaceutical agents for all phases of bipolar disorder including mania, bipolar depression and maintenance (Dimitrakopoulos & Konstantakopoulos, 2015). The increase rate of bipolar spectrum diagnosis consequently led to a sizable increase in the use of mood stabilizers and atypical antipsychotic drugs in children. Given the potential side effects of these medications and possible long-term effects on a developing child, more concern grew over the potential misdiagnosis of BD.

Current treatments for BD may include lithium, certain anticonvulsants, antipsychotics, and sometimes benzodiazepines (Dimitrakopoulos & Konstantakopoulos, 2015). Many people who have bipolar disorder take these medications for years to remain healthy, following a manic episode. During episodes of bipolar depression, other medications may be sought. Medication such as lithium, mood stabilizers, and certain antipsychotic and antidepressants drugs are used to treat bipolar depression (Dimitrakopoulos & Konstantakopoulos, 2015). For mania, depression, along with maintenance of BD, drugs may either be used alone or in combinations to provide the most effective form of treatment.

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Anticonvulsants are just one of the many types of combination medications. Anticonvulsants can be combined with lithium as well as other anticonvulsants for ideal effect (Benazzi, 2007). Some commonly used anticonvulsants for BD include carbamazepine (tegretol), lamotrigine (lamictal), and valproic acid (Depakote). Antipsychotic medications just like anticonvulsants, are medications that can be used alone or in combination with other mood stabilizers in patients with bipolar mania (Benazzi, 2007). Older antipsychotic medications are used for acute mania; these medications include Haldol, loxitane or loxapine inhaled, and Risperdal (Benazzi, 2007). Newer atypical antipsychotics are also useful for bipolar disorder. These newer antipsychotics include Abilify, Saphris, Vraylar, Zyprexa, Seroquel and Latuda among many others (Benazzi, 2007).

Mood stabilizers on the other hand are medications that treat and prevent highs like manic episodes and depressive episodes. They help to minimize the negative effects of grumpy states at social environments such as work and school as well as during social interactions (Benazzi, 2007). Mood stabilizers are an informal term (Benazzi, 2007). The Food and Drug Administration (FDA) does not classify medications as mood stabilizers, however, doctors and patients informally refer to any medicine that has anti-manic or antidepressant properties as such (Benazzi, 2007). Antidepressants are generally prescribed to treat depressive disorders however, in bipolar disorder, a primary mood stabilizer is recommended (Benazzi, 2007). If antidepressants are used to treat bipolar disorder, it is usually added after an anti-manic drug has first been started (Benazzi, 2007). Examples of antidepressants for bipolar depression include bupropion (Wellbutrin), fluoxetine (Prozac), and sertralie (Zoloft). However, in about 10% to 20% of cases of bipolar disorder, antidepressants may cause alterations from depression to manic or hypomanic states, due to this risk monitoring by physicians is crucial (Benazzi, 2007).

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When treating BD in adults, Lithium has generally been looked upon as being the most effective therapeutic agent. However, the use of Lithium has been challenged with some studies reporting a poor outcome and high relapse rates. One specific review on lithium presented high relapse rate, while other studies comparing valproate, lithium, and placebo found that both lithium and valproate are better than placebo in preventing relapses but found no clarity as to whether one use was superior to the other (Rajeev, Srinath, Girimaji, Seshadri, & Singh, 2004). Relapse occurrence in relation to pharmaceutical use is prevalent during the first 2 years following onset. Furthermore, during maintenance phase patients often experience residual mood symptoms, cognitive deficits and functional decline, presenting inadequate effectiveness of existing treatments and the need for new, effective and safe treatments for bipolar disorder (Dimitrakopoulos & Konstantakopoulos, 2015). Some data suggest (in adults) that a combination of lithium and valproate may be better than either drug alone (Rajeev et al., 2004). Therefore, combination treatment and polypharmacy are the most common choices concerning relapse prevention. However, this may not be the most beneficial form of treatment if medications, such as Lithium, is transferred over to children and adolescents. BD diagnoses brings upon prolong exposure to toxic medications instead of other less aggressive therapies or medications, which can lead to high toxicity in children, making it very problematic.

With treatment of children, several clinical trials have tested the efficacy of medications for children diagnosed with bipolar manic/ mixed episode. Placebo-controlled studies of 3–6 weeks' duration discussed by Vitello (2013) found documentation of the efficacy of several second- generation antipsychotics (SGAs), including risperidone, aripiprazole, quetiapine and olanzapine, in the acute management of manic and mixed symptoms in children (aged 10–17 years). Based on the finding of previous research Risperidone, Aripiprazole, Quetiapine and

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Olanzapine have been approved by the U.S. FDA for pediatric use in bipolar mania or mixed states (Vitello, 2013). However, with these treatments come noticeable side effects. For instance, olanzapine is recommended as a second-line treatment, after considering other treatments due to its potential to increase weight and cause other metabolic problems. In Kowatch, Scheffer, Monroe, Delgado, Altaye & Lagory (2015) study, a small sample of preschool children diagnosed with BD using risperidone demonstrated clear efficacy versus a placebo; however, weight findings suggest that younger children with BD are more sensitive to the effects of psychotropic. Evidence for the effectiveness of non-antipsychotic mood stabilizers in children is not well supported. Lithium, valproate, carbamazepine and oxcarbazepine are usually used clinically to stabilize severe mood instability, however, only a few open-label studies presented by Vitello (2013) suggested effectiveness in children with bipolar disorder, but no published placebo-controlled trial were used to determine their efficacy.

In summary, lithium use has shown to be an ineffective use of prolong effective treatment for BD symptomologies due to high relapse rate and inability to treat all aspects of Bipolar Disorder. The most effective treatments for the acute management of manic symptoms in children come with FDA approved SGAs, which has shown to be more effective than traditional non-antipsychotic mood stabilizers. However, with old and new treatments, concerns as to adverse effects, and long-term treatment is still a prevalent question. Therefore, continued search for more effective and safer agents should continue.

Other Non-Medication Treatment

One means of alternative treatments for those suffering from BD is interpersonal and social rhythm therapy (IPSRT). IPSRT is an empirically supported adjunctive psychotherapy for

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adults with bipolar disorder. Its form of psychotherapy has been shown to help postpone relapse and speed recovery from a bipolar depressive episode (Hlastala, Kotler, McClellan, & McCauley, 2010). It has also presented the ability to increase occupational and psychosocial functioning in adults with BD. In a study by Hlastala et al. (2010) study, researchers described adolescent-specific developmental adaptations made to IPSRT and reported the results from an open trial of IPSRT-A (A standing for adolescents) with 12 adolescents with whom all had bipolar spectrum disorder. Results indicated that feasibility and acceptability of IPSRT-A were high, meaning a high rate of participants completed treatment, had high session attendance, and high adolescent-rated satisfaction scores (Hlastala, 2010). Furthermore, IPSRT-A participants experienced significant decreases in manic, depressive, and general psychiatric symptoms over the 20 weeks of treatment (Hlastala, 2010). Global functioning was also shown to increase significantly as well. With such supporting evidence, Hlastala et al. (2010) concluded that IPSRT-A is a promising alternative treatment for adolescents with bipolar disorder.

Cognitive behavioral therapy (CBT) has been found to be an effective corresponding treatment to pharmacotherapy in BD. The goal of CBT is to target cognitive, behavioral, and affective changes in depression and mania, and to help the patient efficiently manage BD by halting the advancement of episodes (Basco, Ladd, Myers, & Tyler, 2007). One objective of CBT is treating BD with psychoeducation. Psychoeducation educates about the disorder, the pharmacological treatments, and the ways in which environmental factors and the patient's behaviors and cognition affect the course of the illness (Basco, Ladd, Myers, & Tyler, 2007). The next step of CBT according to Basco et al. (2007) is to help patients to develop an early warning system. With the early warning system patients can anticipate the onset of depression or mania, which provides them with the chance to respond accordingly. Element three implicates

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improvement and adherence to pharmacological treatments, psychosocial interventions, and lifestyle alterations that are critical to handling the illness; for example, good sleep and hygiene. With more of knowledge of BD, improvements are in self- monitoring, increased adherence to treatment and lifestyle changes. The last piece of intervention, cognitive and behavioral management of symptoms, can effectively be conducted. Thus, the last goal of CBT is to teach patients methods for resolving and preventing common psychosocial problems associated with the disorder, which include relationship, financial, and work-related difficulties (Basco, Ladd, Myer & Tyler, 2007).

Another effective alternative treatment includes, electroconvulsive therapy (ECT). In a case report by Amino, K., Katayama, & Iimori, (2011) a 63-year-old woman was described as medication-resistant, with extreme cases of rapid cycling due to bipolar disorder. In the case report, re-admission was successfully reduced by dispensing continuation-maintenance electroconvulsive therapy (C/M-ECT). Her first mild depressive episode was presented at age 61, two months later her symptoms subsided without treatment**.** However, during her second depressive episode, admission was sought into hospital care. During her time at the hospital her diagnosis was changed to BD type II and mood stabilizers was initiated as a form of treatment. However, her mood altered recurrently. By her third and fifth admissions C/M-ECT was administered and modest improvement was observed. Continued use of ECT was administered weekly for the first month then reduced to biweekly on going. By 12 months of C/M-ECT, she did not reach remission and has yet to be hospitalized.

An increasing number of literature has begun to suggest that psychosocial interventions are also important forms of treatment for families. Such interventions help families develop an understanding of symptoms, course, and treatment of BD as well as teach youth and parents

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methods for coping with symptoms and preventing relapse. Fristad and MacPherson (2014) identified thirteen psychosocial intervention trials for pediatric Bipolar Disorder, through a comprehensive literature search and evaluation according to the Task Force on the Promotion and Dissemination of Psychological Procedures guidelines. The interventions were examined in conjuction to pharmacotherapy. Interventions examined included Family psychoeducation, Multi-Family Psychoeducational Psychotherapy, Family-Focused Treatment, cognitive-behavioral therapy (CBT), Dialectical behavior therapy (DBT) and interpersonal and social rhythm therapy (IPSRT) (Fristad & MacPherson, 2014). Researchers concluded that psychosocial interventions that involve families, psychoeducation, and skill building offered added benefit to pharmacotherapy.

Alternatively, even with the highlights and pitfalls of both medication and psychotherapeutic treatment the combined use of both is the best way to go. In Parikh et al. (2015), researchers investigated the longitudinal course of symptoms in bipolar disorder among individuals receiving optimal treatment with both pharmacotherapy and psychotherapy, combined. In the study of 160 participants (all with either BD I and II), all participant received regular pharmacological treatment as well as cognitive behavioral therapy or psychoeducation. Participants were assessed at baseline and for 72 weeks using the Longitudinal Interval Follow-up Evaluation (LIFE) scale scores for mania/hypomania and depression, as well as comparison measures (Parikh et al., 2015). Results indicated that combined pharmacological and psychosocial treatments provided improvement of illness compared to results of previous studies. Despite this, from as early as the mid-1990s, there has been a debate in the literature that mania in children and adolescents may present evident differences when compared to adults.

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In children, the onset of mania was theorized to present a symptom of severe irritability with long periods of very rapid mood cycling within the day, versus more detached mood cycles.

Controversy of BD in children and adolescents

With such broad classification under the umbrella of bipolar disorder, the rate of bipolar disorder diagnosis in the US increased over 40-fold in less than a decade (Baweja et al., 2016). The increase rate of BD diagnosis consequently led to a sizable increase in the use of mood stabilizers and atypical antipsychotic drugs in children. Given the potential side effects of these medications and possible long-term effects on a developing child, concern grew over a potential misdiagnosis of BD.

The significant controversy concerning the validity of the broad spectrum of bipolar disorder led to the development of an alternative classification under the *Diagnostic and Statistical Manual of Mental Disorders*, Fifth Edition (DSM-5) known as Disruptive Mood Dysregulation Disorder (DMDD) (Rao & Uma, 2014). Disruptive Mood Dysregulation Disorder (DMDD) was introduced as a new diagnostic unit under the category of depressive disorders in the DSM-5, primarily to address concerns of the misdiagnosis and overtreatment of bipolar disorder in children and adolescents that had earlier been raised by DSM-5 workgroup. (Rao & Uma, 2014). With the new classification of DMDD, there is a larger percentage of children and adolescents with severe cases of persistent irritability that are likely to fall under the categorical umbrella of the disorder, which in the prior DSM-IV-TR classification, they could not (Baweja et al., 2016).

Shiraz and Shanrivar (2014), tried to determine whether DMDD was a subgroup of bipolar disorder or an independent disorder. Researchers found, based on reviewed literature, that BD and DMDD are similar in severity and functional impairment, but different in gender

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distribution, family clustering, course and prognosis, comorbidities and neuro-psycho-physiologic functions. For example, when concerning distribution, DMDD is more evenly distributed than BD, where females are highly more at risk with the classification of BD II. Comorbidity is also found to be greater with those diagnosed with DMDD than BD. Lastly, BD disorder and DMDD are both inheritable, however, BD is noticeably more inheritable than DMDD. Furthermore, children with DMDD were more likely to suffer from depressive and anxiety disorders, unlike those with BD. The study concluded with non-support of DMDD as a subgroup of BD, but agreed that it should be an independent diagnosis within the mood disorder section of the DSM. With regards to a review by Deveney et al. (2013), the emotional responses and neural activity between 19 severally irritable children (meeting the criteria of mood dysregulation) and 23 healthy children, mood dysregulated children reported increased frustration and a decrease in ability to shift attention during frustration condition during a cued-attention task.

Sparks et al. (2014) also examined BD in comparison to DMDD. Results from their study suggested that offspring of parents with BD are more likely to meet criteria for DMDD (when compared to offspring of community control parents). The study also found that the core features of DMDD include temper tantrums and chronic irritability. The above stated disorders are more associated with mood and behavioral disorders than with bipolar disorder. Studies suggested that diagnosis of irritability should depend on severity and criteria such as episodic or non-episodic, which would serve as a better predictive factor when differentiating BD from DMMD (Shirazi, Shabani & Alaghband-Rad, 2014), especially since chronic and severe irritability does not reflect a developmental presentation of mania (Mikita & Stringaris, 2013).

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However, even with the new addition of Disruptive Mood Dysregulation Disorder to the DSM-5, there still exists controversy. The controversy over the new classification this time around however, stems from the lack of published validity studies and lack of published data (Rao & Uma, 2014). The scientific support for disruptive mood dysregulation disorder comes mainly from studies related however not identical, to mood dysregulation. Furthermore, DMDD overlaps with many other mood disorders in children including oppositional defiant disorder, ADHD, anxiety disorder, bipolar disorder, autism, and intermittent explosive disorder. All these factors make it difficult to test out a diagnosis of DMDD. Even more controversy surrounds treatment for DMDD. With its "newness" there are no evidence-based treatments for the disorder. All these controversies will thus be discussed.

Permanency of Disruptive Mood Dysregulation Disorder

Research has suggested that childhood bipolar disorder does not present distinct manic episodes but rather persistent irritability (among other symptoms), thus something other than BD disorder had to be considered when concerning children (Kavoor & Mitra, 2015). DMDD was established to halt the growth of over diagnosis of BD in children with these symptoms. However, little research and empirical data support the newfound diagnosis, (Kavoor & Mitra, 2015).

The inclusion of Disruptive Mood Dysregulation Disorder in the DSM-5 has been controversial due to the lack of knowledge behind the disorder. Support for DMDD has been based on research focusing on severe mood dysregulation (SMD), a condition characterized by chronic and severe irritability in combination with symptoms of depression, oppositional defiant disorder (ODD), mania and attention deficit hyperactivity disorder (ADHD) (Doughter et al., 2014).

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Based on Copeland et al. (2013), three-month occurrence rates for the satisfaction of the dysregulation and disruptive mood disorders ranged between 3.3% and 0.8% with the highest rate present in preschoolers. With stricter criterion guidelines, rates only dropped slightly, but were mainly unaffected in regards to onset and duration criteria. DMD nevertheless occurred in conjunction with oppositional and defiant depressive disorders (Copeland et al., 2013). However, it also occurred alongside another disorder 62%-92% mostly and occurred with behavioral and emotional disorders in a range of 32-68% of the time (Copeland et al., 2013). Many of these findings caused further debate distinct periods of lasting anger not accompanying chronic irritability should be considered part of bipolar phenotype (Vitello, 2013).

Furthermore, Mayes et al. (2015) found that 55% and 71 remissions of new cases indicated instability of DMDD symptoms over an 8-year period. 29% of children still presented symptoms over 8 years later. Only one child in Copeland's et al. (2013) study did not present co-existing disorders along with DMDD, leading researchers to question the validity of DMDD as an independent diagnosis. In another study presented by Mayes et al. (2015), the findings suggested that DMDD and ODD are not meaningfully different based on symptoms presented in children and that symptoms are mainly common in those diagnosed with autism, even more than with ODD alone. Children with autism scored significantly higher DMDD scores than all other groups. These findings also lead to questions as to the permanency of DMMD in the clinical and DSM realm.

Criteria for diagnosing Disruptive Mood Dysregulation Disorder

The diagnosis of DMDD consist of persistent and severe temper outburst and anger (Rao, 2014). The condition is characterized by severe and chronic irritability. In the recent DSM-5, DMDD is classified as a childhood and adolescent disorders (American Psychology Association,

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2013). DMDD is defined by severe temper tantrums, which are inappropriate when considering the situation, inconsistent when considering developmental level, and occurs at least three times per week (Dougherty et al., 2014). Furthermore, mood between outbursts or persistent anger or irritability symptoms must be evident for at least 12 months in at least two contexts. DMDD is not diagnosed in children before the age of 6 years and must be observable by the age of 10.

The DMDD criteria mainly come from Severe Mood Dysregulation (SMD), with certain significant modifications. The National Institute of Mental Health (NIMH) suggested a syndrome called "severe mood dysregulation" (SMD) to encourage the systematic evaluation of children with symptoms of recurrent temper outbursts and a persistent negative mood (Baweja et al., 2016). Therefore, SMD was predominantly created to assess if severe non-episodic irritability belonged to bipolar spectrum disorder. DMDD however, differs in several ways from SMD. SMD requires recurrent temper outbursts, a persistent negative mood, (unlike in DMDD, which is a depressed mood), and the presence of at least three "hyperarousal" symptoms such as pressured speech, racing thoughts or flight of ideas, intrusiveness, distractibility, insomnia, and agitation (Baweja et al., 2016). Age of onset for SMD (before the age of 12) and the maximum symptom-free period (2 months) are also noticeable different with the two diagnoses.

The following represents the detailed description of criteria for diagnosing DMDD based on the DSM-5 (APA, 2013):

A. Severe, recurrent temper outbursts (verbal and/or behavioral) that are grossly out of proportion in intensity or duration to the situation/provocation

B. Outbursts are inconsistent with the developmental level

C. Occur three or more times/week

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D. Mood between temper outbursts is persistently irritable or angry most of the day, nearly every day, and is observable by others

E. Duration is 12 or more months, without symptom-free interval of three, or more consecutive months

F. Symptoms are present in at least two of three settings (home, at school, with peers) and are severe in at least one setting.

G. Age at onset, by either history or observation, is before 10 years

H. Diagnosis should not be made for the first time before age 6 years or after 18 years

I. Full symptom criteria for manic/hypomanic episode have never been met for longer than 1 day

J. Behaviors do not occur exclusively during an episode of major depressive disorder. This is explained by other disorders such as dysthymia, autism spectrum disorder, posttraumatic stress disorder, and separation anxiety disorder. (Diagnosis cannot coexist with bipolar disorder, intermittent explosive disorder, and ODD).

K. Symptoms not due to physiological effects of a substance, a medical or neurological condition

Assessment method for DMDD

There are no validated scales or standards for measuring irritability in children. Parents and teacher focus mainly on frequency when measuring irritability and tantrums, but not so much on severity (Baweja et al., 2016). Many measures fail to capture such detailed descriptions of the triggers, duration, and intensity of temper outbursts that would be useful in the diagnosis of DMDD (Baweja et al., 2016). Though there are many validated measures for assessing such things as aggressive behaviors, when considering the use of such assessment for DMDD, it

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becomes problematic. Baweja et al. (2016) states that physical aggression is not deemed a requirement for DMDD since temper outbursts can be verbal and aggressive youth in many cases may not present persistent irritability. This disqualifies the aggression rating scale being used as an assessment tool for DMDD. Other sources for potential assessment of DMDD are the Kiddie Schedule for Affective Disorders and Schizophrenia for School-Aged Children (McGough, 2014). NIMH research group and others have used it using interviews to diagnose DMDD (McGough, 2014). However, the interviews have not been endorsed for mainstream clinical use and may be problematic in terms of administration time.

If a proper well adaptive clinical assessment was to be established for DMDD, it would be very essential to properly assess such things as triggers for temper outbursts, duration and frequency of outbursts, behaviors commonly presented with outbursts, as well as what helps to calm the outbursts. Further assessment factors would also include gathering information from important people in the child's environment during times of symptoms; such people as parents and teachers. This would help assess the irritability, variability and severity across home, school, and in other social settings (Baweja et al., 2016).

Comorbidity and DMDD

Noticeably evident with DMDD research is the amount of comorbidity found with its diagnosis. In Dougherty et al. (2014) DMDD was assessed with 6-year-old children (n=462) using a parent-reported structured clinical interview. The study found comorbidity between the diagnosis of DMDD and emotional behavioral disorder in 60.5 percent of the children. At the age of six, DMDD was associated with depression, oppositional defiant disorder, and lower support and marital satisfaction in children's parents. The study also found that age three predictors of DMDD at age six included child attention-deficit hyperactivity disorder,

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oppositional defiant disorder, the child behavior checklist-dysregulation profile, poorer peer functioning, child temperament, parental lifetime substance-use disorder and higher parental hostility.

Furthermore, in Copeland et al. (2014), authors tested whether meeting diagnostic criteria for DMDD in childhood predicts adult diagnostic and functional outcomes. Young adults who had a history of childhood DMDD showed elevated rates of anxiety and depression. This population was also more likely to meet the criteria for more than one adult disorder compared to those with no history of childhood psychiatric disorders and those meeting the criteria for psychiatric disorders other than DMDD in childhood (Copeland et al., 2014). Moreover, participants in the study with a history of DMDD were more likely to have bad health outcomes, be impoverished, and have reported police contact and lower education attainment when compared with non-psychiatric and psychiatric cases, (Copeland et al., 2014). These findings were consistent with Copeland, Angold, Costello & Egger (2013) findings, which found that diagnosis of DMDD is associated with high levels of social impairment, school suspension, service use and poverty and a high frequency of showing up with psychological dysfunction, and in the case of the study, particularly oppositional defiance and depressive disorder (which were not mentioned to be associated with BD). Lastly, a look at the longitudinal Great Smokey Mountain study (McGough, 2014) found that individuals with DMDD had more predictively worse outcomes than those with other psychiatric disorders. DMDD suffers were predicted to have increased adult psychopathology, poverty, lower educational success, poorer overall health, and more contact with police.

Alternative classifications other than DMDD

DMDD and BD

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The assignment of diagnosis of BD to adolescents and children suffering from chronic irritability without evident maniac episodes has had controversial arguments. The debate has not only taken an academic angle, which focuses on broadening the diagnostic constructs in clinical practice but also helped in increasing healthy population of those in their late childhood (Strakowski et al., 2010). Again, based on the clinical guidelines, a diagnosis of BD in children should only be made in events when the patients have histories of hypomanic or manic episodes in line with the relevant criteria for diagnosis, including the frequency and duration of such episodes. In other words, the diagnosis for BD should not be done in the absence of episodes characterized by concurrent change in cognition and behavior and a change in mood. The view presented in the DSM-5 and the traditional view is that there is a high likelihood of BD occurring in pre-pubertal children, though rarely becoming highly prevalent during teenage years, and that symptoms in the young population are identical to those in adults (Young & MacPherson, 2011).

DMDD and the Disruptive Behavior Disorder

The presence of temper outburst and irritability has led to some clinicians and researchers to claim that there is no clear classification between conduct disorder, ODD and DMDD (Mayes, Mathiowetz, et al., 2015). Proponents of this assertion hold that BD is occasionally misdiagnosed as, or co-morbid with, attention-deficit hyperactivity disorder. ADHD seems to have a system overlap with the BD in adolescents and children though irritability in BD is episodic, unlike the chronic cases in DMDD. Other researchers however, argued that greater percentages of the adolescent population meeting the criteria for severe dysregulation of mood also met the criteria for ADHD and ODD despite other areas of research indicating a modest overlap in ODD and DMDD (Mayes, Waxmonsky, et al., 2015).

Intermittent Explosive Disorder (IED)

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Intermittent explosive disorder is a seriously impairing, persistent and highly prevalent adolescent mental disorder, which is not only under treated but also under studied. In one major study of 6000 adolescents, close to two-thirds of the sample size, that is (roughly 63.3%) recorded lifetime anger attacks, which involved threatening violence, destroying properties, and or engaging in violence (Mulraney et al., 2016). Averagely, IED had an early age at the onset and showed a high level of persistence as recorded by the percentage of the lifetime cases, who met the 12-months criteria for IED. There was also a significant comorbidity with most of the disorders recorded in the DSM-IV, which included substance disorders, mood, and anxiety. Despite the fact that more than one-third of adolescents with 12-month intermittent explosive disorder were treated for their emotional problems in the year prior to the scheduled interview, only 6% of the sample size with the one-year IED received treatments specifically for anger. 24% met the criteria for CD and ODD, whereas 19% met that for the ADHD (Mulraney et al., 2016). The significant connections with comorbid mental disorders, which have later stages in their onset, early ages at the onset of Intermittent explosive disorder, and the low cases proportion in treatment, all makes IED a promising alternative disorder from DMMD.

Treatment for Disruptive Mood Dysregulation Disorder

There are currently no set guidelines for the treatment of DMDD, throughout reviews for treatment options. However, pharmacotherapeutic treatment options for symptoms, such as aggression and chronic irritability, include antidepressants/ selective norepinephrine reuptake inhibitors, mood stabilizers, psycho stimulants, antipsychotics, and alpha-2 agonist (Tourian et al., 2015). Studies have found that significant number of children do not respond well to existing treatment (Rao & Uma, 2014), therefore, many approaches should be considered to provide the best solutions when tackling the disorder. The side-effects of medication is also very important

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to tackle as well as issues it may cause on a developing child, particularly since many pharmacotherapeutic medications may lead to additional weight gain or adverse reactions. Alternatively, similar treatments for associative disorders such as ADHD has been the best outlook into prospective pharmaceutical forms of treatment.

Baweja et al. (2016) discussed possible treatments for DMDD and found that in previous randomized controlled trials there were no evident benefits of Lithium with those patients diagnosed with BD. However, similar research also found out that drug such as divaproex sodium combined with CNS stimulants and behavioral therapy to be more effective in treating related disorders such as Attention Deficit Hyperactivity Disorder (ADHD). Furthermore, trials with ADHD youth who also passed diagnostic criteria for SMD were found to tolerate methylphenidate and amphetamine symptoms, which in turn presented significant reductions in externalizing symptoms but not much significance in reduction of mood symptoms. Additionally, participants also presented significant impairment even with medication use therefore, suggesting that treating ADHD and other comorbid conditions before targeting irritability and aggression in DMDD would be ideal. Further studies and clinical trials need to determine effectiveness and safety of all these possible treatments when considering DMDD.

Psychotherapeutic interventions are another possible form of treatment for DMDD. In a randomized trial discussed by Baweja et al. (2016), children with ODD symptoms were found to benefit from parental interventions. In the findings, parental interventions were effective in emotional-dysregulation. Behavioral modification interventions were also found to be equally effective in treating children with ADHD and SMD, concurrently (as well as without the SMD diagnosis attached). With behavior modification, the goal is to either strengthen or weaken behaviors. Positive behaviors are reinforced through positive rewards while negative behaviors

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are ignored or given limited attention. Negative behavior can further be controlled through use of negative consequences for unwanted behaviors. Furthermore, in Johns & Levy (2013), study an evaluation of a six-year-old boy displaying many problematic moods, behavior and symptoms found that a focus on interventions promoting mother-child relationship prompted significant improvements in the child. Based on the results, Johns & Levy (2013) recommend interventions, which develop warmth, calmness, predictability in the parent-child relationship, and advise the use of time-out for the mother and time-in for the child to aid in behavior modification. These interventions can be used as possible treatments to manage distress among those experiencing DMDD. However, youth with SMD symptoms remain more impaired when compared to ADHD and ODD youth, suggesting that perhaps interventions need to cater to specific deficits and impairments seen within SMD and DMDD.

Owing to the fact that DMDD has been recently included in the taxonomy, there are only a few clinical trials, which could assist in informing the clinical practice (Copeland, Angold, Costello, & Egger, 2013). Thus, vast of the recommendations in management are extrapolated from the studies dealing with associated disorders such as depression, ODD, and severe mood dysregulation. Various practitioners scrutinized the effect of cognitive behavior therapy and parent training among children who had just celebrated their fifth birthday, who are presented with emotion dysregulation. Even though the young ones were too young to fall in the diagnostic criteria for either DMDD or severe mood dysregulation, the research indicated that young children having emotional dysregulation were more sensitive to changed parenting and demonstrated stronger effects of treatment as compared to the children who did not present similar symptoms (Copeland et al., 2013). With the high comorbidity of ADHD with DMDD,

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stimulants could possibly serve well as the most appropriate treatment. Medications, which improve depressed mood and irritability, may also be of high value.

Another medication that has demonstrated evidence of effectiveness is the second-generation antipsychotics such as risperidone (Meyers, DeSerisy, & Roy, 2016). A double blind random control trial of lithium treatment never reduced symptoms among patients who were hospitalized with severe mood dysregulation. An open-label study with risperidone also recorded a significant reduction in irritability. The study got a number of empirical support, which was also based on evidences of treatment outcomes. The aforementioned research remains consistent with the common finding that risperidone has the ability to reduce irritability and aggressive behavior among the young ones (Meyers, DeSerisy, & Roy, 2016). Even so, the early findings ought to be viewed with the utmost caution, while putting into consideration their potentially contraindications among the young, together with the idea that they do not refer to patients specifically with DMDD. Preliminary research unveils that the adolescents suffering from CD/ODD and symptoms, which suggest DMDD demonstrates symptom reduction when treatment with divalproex is integrated. The above-mentioned treatment is the one that is commonly applied in BD. Discussions with the patients and parents as well as careful scrutiny of the contraindications is key when making prescriptions of these medications.

Other than the curative approaches, the educational approaches are also relevant as far as the management and control of DMDD is concerned (Okado & Bierman, 2015). The parents, teachers, and clinicians ought to work closely to address as well as meet the special needs of the patients such as additional time for completing school tests, classroom support, and not limited to consistency (Okado & Bierman, 2015). It is also important to make the teachers aware of the medications' adverse effects if at all they are prescribed. Families and patients should also

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receive adequate sensitization and education relating to the disorder, its related impairment and comorbid symptoms, as well as its maintenance approaches (Okado & Bierman, 2015). Finally, yet important, the allied health professionals should assist in addressing the changes in lifestyles, while giving relevant and appropriate advises on living healthy (Okado & Bierman, 2015). The changes in health might include the strategies employed for dealing with the potential crises in the environment as well as identifying possible triggers and stressors (Okado & Bierman, 2015). A laid down plan of emergency management such as extreme control loss and suicidal behaviors also ought to be put in consideration.

Additionally, family therapy and parenting programs should be put into consideration since the majority of cases suffering from DMDD stem from families with ineffective communication and parenting skills (Okado & Bierman, 2015). It would not be a surprise to realize that parents in these families have histories of psychiatric disorders. If such a case is identified, a prompt referral should be considered. The situation is an ideal one. Even though, in several countries, the resources will not be available, thus the clinicians might be left with no choice than to rely on schoolteachers, psychoeducation, extended families, and not limited to other support networks (Okado & Bierman, 2015). There is also a ongoing evidence that computer based trainings have shown effectiveness (Sparks et al., 2014). It has been pointed out clearly that irritable youth who suffer from DMDD might be used to misperceiving unclear facial expressions as angry (Sparks et al., 2014). There is also a preliminary evidence illustrating that trainings that are computer based can be effective in assisting those suffering from severe irritability or DMDD (Sparks et al., 2014).

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Disorders in DSM-5 historically added that are Questionable

Criticism of DMDD

Criticism of DMDD was evident as soon as it was introduced into the DSM. One of the biggest criticisms surrounding the diagnosis was the lack of published validity studies associated with the disorder. Furthermore, there was much disagreement amongst clinicians when deciding to add DMDD as a diagnosis in the DSM-5. Support for including DMDD into the DSM-5 stemmed from studies on SMD, which though related to DMDD, is not a duplicate disorder (Baweja et al., 2016). Only 38.9 percent of children with SMD meet the criteria for DMDD, which brings into question the degree to which the results studied from SMD may be applicable to those suffering from DMDD (Baweja et al., 2016).

Another source of criticism is due to the level of comorbidity that is associated with DMDD. In a large national represented sample, presented by Baweja et al. (2016), 92.8 percent of DMDD-positive children met the criteria for another DSM-IV-TR disorder. Furthermore, almost all the youth diagnosed with DMDD met the criteria for ODD, making differentiation between the two diagnoses problematic. The big overlap evident in the diagnosis of DMDD serves as problematic area for treatment. Questions arise as to which disorder to treat first and with no "real" treatment discovered yet for DMDD alone, treatment from similar or related disorder is used in substitution.

Discussion

The concern regarding over diagnosis of Bipolar Disorder in children is definitely one of valid reasoning. Based on previous research there consist clear-cut differences involving the onset symptoms of bipolar disorder in adults and in children. The onset in children presents a prevalent irritability with longer periods of very rapid mood cycling and detached mood cycles.

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This evidence clearly demonstrated differences in phenotype that caused a reasonable revaluation of the large classifications under the umbrella of bipolar disorder. The emergence of this information led to probable cause to investigate a new diagnosis to fill in the discrepancy in symptoms properly. The DSM-5 recommended that the affected children be classified separately from both bipolar disorder and oppositional defiant disorder in order to assist clinical care and treatment research. The increase rate of BD diagnosis consequently led to a large increase in the use of mood stabilizers and atypical antipsychotic drugs in children. Given the potential consequences of long-term effects on children, concern grew over potential misdiagnosis. Therefore, a new diagnosis came in the form of the DSM-5 and its addition of Mood Dysregulation Disorder (DMDD). The introduction of DMDD was considered to be a betterclassification for those suffering from alternative symptoms that BD could not account for.

Based on findings from many studies, there exist a strong overlap between DMDD and many other DSM-5 diagnosis. DMDD is a disorder with very high comorbidity with such disorders as ADHD, SMD, and even autism. Large numbers of DMDD cases also meet the criteria for ODD. The relation of both diagnoses are so similar that presently, there exist a noticeable debate that DMDD may be a better functioned modifier of ODD, given that virtually all children with DMDD meet the criteria for ODD and that irritability appears to be a distinct domain from symptoms of ODD. Even the work group for ICD-11 recommended that DMDD be classified as a specifier of ODD, with indication as to whether or not chronic irritability and anger were included (Kavoor & Mitra, 2015).

Strong comorbidity along with little clinical research still leads to controversy over the labeled diagnosis of DMDD. Evidence thus far support the idea that symptomologies definitely differ from that of Bipolar Disorder however, the strong correlation with other DSM-5 diagnosis

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shows that perhaps it may be a moderator of pre-existing diagnosis rather than a diagnosis that can stand on its own. The necessity to figure out whether DMDD is an applicable diagnoses or specifier of another labeled disorder is crucial in order to provide better treatments and outcomes for those suffering from these unknown symptomologies. Therefore, the field can benefit from more research of the symptomologies in order to improve assessments, diagnosis and treatment of patients currently suffering from what is known (currently) as DMDD.

Developmental psychopathology perspective

Developmental psychopathology perspective has been evident in research concerning a wide range of psychological conditions related to DMDD such attention-deficit/hyperactivity disorder (ADHD), oppositional defiant disorder (ODD), conduct disorder (CD), anxiety disorders, depressive disorders, bipolar disorder, autism, and schizophrenia (Drabick & Kendall, 2010). The perspective considers more complex influences leading to a disorder such as normative vs. atypical development, contextual factors, categorical and dimensional models, risk and resilience, and developmental pathways.

One area the developmental psychopathology perspective focuses on is the idea of normative development. The emphasis of normative vs. atypical development provides an important and necessary comparison for determining whether youth behavior is atypical or problematic. An example to help understand this concept is a non-compliant toddler. Though it is recognized that a non-complaint toddler or youth may cause distress to care-giver, it is still a developmentally expected behavior (Drabick & Kendall, 2010). However, in order to facilitate appropriate diagnosis, it must be determined when the behavior becomes atypical and occurs more frequently than would be observed among individuals of the same age and/or

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developmental level (Drabick & Kendall, 2010). The *DSM* is the indicator of how long a behavior must be present and in what settings for the child to meet diagnostic criteria.

Many contextual influences such as parent-child, family, peer, and neighborhood are critical to consider in research involving psychopathology among youth however, there is barely any attention given to such influences in research involving *DSM* diagnoses (Drabick & Kendall, 2010). The *DSM* has often been criticized for a tendency to individualize disorders. The developmental psychopathology framework however, provides several possible research routes involving contextual factors(Drabick & Kendall, 2010). For example, contextual factors have been considered as predictors of risk, resilience, symptom severity, course, prognosis, and treatment outcomes (Drabick & Kendall, 2010). Furthermore, contextual factors can also be used as a source of explanation in the development and maintenance of psychological symptom through consideration of Individual and context interactions (Drabick & Kendall, 2010). An example provided by Drabick and Kendall (2010) involved a youth who exhibited difficult temperament. The difficult temperament may be more likely to prompt negative or strong responses from parents and peers. With time, these difficulties in interpersonal reactions may contribute to an increase in the likelihood that the youth with the difficult temperaments will develop a diagnosis. Thus, the combination of individual and contextual factors led to a particular outcome, as opposed to both factors operating in isolation.

Another developmental psychopathology principle that aids diagnoses among youth is the deliberation of both categorical and dimensional models. The *DSM* uses the categorical model in order to conceptualize diagnoses (Drabick & Kendall, 2010). Additionally, the dimensional approach assists in identification of at risk children who contain the possibility presenting more severe or malignant course before full presentation of symptoms (Drabick & Kendall, 2010).

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Thus, categorical models are important for epidemiology, communication among professionals, treatment research, and obtaining services, while the dimensional models can aid evaluating risk, resilience, etiology, prevention, and intervention (Drabick & Kendall, 2010). The joint use of both categorical and dimensional, would better facilitate understanding behind development, maintenance, prognosis, treatment, and course of a variety of psychological conditions, as well as the development of co-occurring psychological symptoms and comorbid syndromes (Drabick & Kendall, 2010).

Limitations of project

Limitations of this project stem from the fact that Disruptive Mood Dysregulation Disorder (DMDD) is a relatively new classification in the DSM-5 with not much research behind it. Therefore, finding a rich source of research articles to build from was hard, yet the ones out, provided enough information to make a solid argument for and or against the diagnosis. Further research however, is very much warranted on the classification, which in time, there will be more needed.

Conclusion

With evidence collected from different source of research, DMDD insight and treatment is currently controlled by clinical experience and grounded on limited evidence concerning treatment approaches of particular behaviors such as temper outbursts and persistent aggression (Rao, 2014). Regardless of whether the diagnosis and assessment of DMDD in its today's society survives the test of time, the adolescents and children who suffer from chronic irritability are highly hospitalized and frequently impaired. Clinicians and medical professionals with vast experience in their respective fields are conscious of the fact that the majority of these children come from unstable families, suffer from many co-morbid disorders, face increase chances of a

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problematic future, and have no evidence based treatment for their prognosis; thus, all angles of complexity should be considered when deliberating management and treatment for this disorder, with the main focus being to advance benefits and minimize as much harm (emotional and physically) as possible.

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