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Causes and Treatment of Borderline Personality Disorder in Light of Genetic and Environmental Influences

Chang Sun[1,a,*,†], Wanlin Zhang[2,†], and Xufan Zhou[3,†]

[1] *University of California, Davis, Shields Ave, Davis, CA 95616, Davis, CA 95616, United States*
[2]*Guangdong Ocean University, Haidu Road, Machang District, Zhanjiang City, Guangdong Province, China*
[3]*Shenzhen Foreign Language School, Yantian Road, Yantian District, Shenzhen City, Guangdong Province, China*
a. cfsun@ucdavis.edu
**corresponding author*
[†]*These authors contributed equally.*

Abstract: Borderline personality disorder is a common and serious personality disorder, and it has been one of the hotspots of clinical research because of the severe and incurable impairment of social functioning in borderline personality disorder. Based on this issue, this paper summarizes the influencing factors for the formation of bpd through reviewing previous literature, including the intra-individual factors (genetic, biological, gene-environment interaction) and environmental factors (upbringing, parental emotional instability, childhood abuse, low education level, diverse childhood trauma). In addition, relevant treatments including medical and non-medical treatments (psychodynamic therapy, supportive therapy, cognitive-behavioral therapy) are also discussed. It has been found through research that the etiology of borderline personality disorder is complex, has an extremely profound impact on the patient, and is highly debated in terms of treatment. Some of the current psychotherapeutic methods are more effective, on the basis of which some treatments about medical and pharmacological treatments can be added, or the combination of psychological plus pharmacological dual treatments and the combination of different psychological treatments are necessary for further research in order to obtain better treatment results. The summary in this article is intended to give mental health practitioners some suggestions and inspiration for treating borderline personality disorder.

Keywords: borderline personality disorder, influencing factors, treatment

1. Introduction

Borderline personality disorder (BPD) is a severe personality disorder. On the neurotic-borderline personality disorder-psychotic continuum, BDP is a critical state between neurosis and psychosis, characterized by unsteady states of mind and erratic action [1]. Based on statistics, the prevalence of BPD is about 3% of the population, 10% of all clinical cases, 15%-20% of psychiatric inpatients, and 30%-60% of all personality disorder cases; in clinical counseling, similar cases are common, with signs ranging from mild depression and anxiety, wavering in a state of irritability, to severe

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self-harm and self-injury, with a suicide mortality rate of about 8% to 10% [2]. The influence not only impacts the harmony of the family system, but also forms a bad social world. Therefore, the study of the causes and treatment of BPD has important positive implications for both families and society.

This article examines the factors that shape BDP disorder in terms of genetic factors and environmental factors that influence the development of an individual's personality, and explores psychological treatments for BDP disorder.

2. Borderline Personality Disorder

2.1. Definition

Borderline personality disorder (BPD) is a severe mental condition characterized by psychological volatility, recurrent self-injury and suicide, easy impulsive aggression, and easy co-morbidity with other psychiatric disorders [3]. Moreover, it is a prevalent mental condition indicated by widespread emotional issues, uncontrollable impulsive behavior, difficulties with multiple interpersonal functions, identity disturbances, and cognitive impairments (e.g., depersonalization, decentering, and semi-consciousness) [4].

2.2. Typical Characteristics

The typical characteristics of patients with borderline personality disorder include three main aspects: (1) Cognitive characteristics, confused self-perception; split and extreme thinking. (2) Emotional characteristics: intense volatility: strong hateful emotions. (3) Interpersonal characteristics/social functioning characteristics: sensitive interpersonal relationships; strong dependency and control [5].

3. Influencing Factors

3.1. Internal Individual Factors

3.1.1. Genetic Factors

Genetics can influence an individual's psychological behavior, such as emotional anxiety or depression can be passed on to the next generation of children through heredity. A mother's alcohol, drug, tobacco or drug use during pregnancy can result in a nutritional deficiency after the birth of the baby, which can cause a reduction in the child's physical and mental health. Genetic psychological disorders have a disturbing effect on the metabolism of the individual, especially when the cells in the body are in a high temperature state, which can negatively affect various psychological phenomena such as cognition and emotions. In recent years, due to the rise of genetic techniques and analytical methods, research scholars have gradually explored the genetic influence on BPD, and family lineage studies have proven that borderline personality disorder is hereditary [6][7].

Among them, the 5-hydroxytryptamine receptor (HTR) is the main genetic gene responsible for the etiology of BPD. Hankin et al. investigated adolescent BPD patients and found that the 5-hydroxytryptamine transporter chain polymorphic region (5-HTTLPR) affects the transcriptional activity and subsequent availability of 5-HTT [6]. 5-HTTLPR is closely associated with mood and is therefore also known as the "pleasure gene". Subjects investigated who usually carry the S allele of the 5-hydroxytryptamine receptor exhibit more BPD features. Bukh et al. investigated depressed patients and found that patients carrying the S allele of the 5-HTR had a significant level of

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probability of co-morbid borderline personality disorder[7]. From the above findings, it can be inferred that the S allele of the 5-HTR may be a risk allele for borderline personality disorder.

3.1.2. Biological Factors

The advancement of technology promotes the development of cognitive neuroscience, and for now, the cause of borderline personality disorder may be closely related to cognitive neurological deficits. The prefrontal cortex is one of the most important areas of the brain, controlling human personality and intelligence because of its extensive neural connections, complex structure, and rich and complicated bidirectional connections. Prefrontal neural network is likely to be abnormal in patients with borderline personality disorder, suggesting that the prefrontal neural network is a crucial element influencing the etiology. This network mainly includes the amygdala, hippocampus, anterior cingulate gyrus (ACC), and periaqueductal prefrontal cortex (PFC). One of the distinguishing qualities of borderline personality disorder is an imbalance in mental discipline. Inhibitory control is the main mechanism by which individuals rationally regulate their emotions and dissipate irrational emotional responses. Ma, a researcher, used a biofeedback measurement instrument to obtain physiological indicators of BPD patients and found that the executive control function as well as emotion regulation dysfunction in BPD patients were associated with impaired inhibitory control mechanisms [8].

3.1.3. Gene-environment Interaction

Gene-environment interactions are mainly manifested in multiple perspectives such as personality cognition, emotional attitudes, volitional abilities, and psychosocial support, and can also influence sound personality development through the mediating role of biology and society [9]. Stress is currently studied in depth in the field of psychology. Stress is a reaction to the overall response phenomenon of physiological, psychological, and social systems when an individual is overburdened with perceived environmental stimuli, and this reaction has positive aspects as well as negative effects. Environmental stimuli can be called stressors. Psychological stressors include parent-child relationship conflicts, unmet psychological needs, high parental expectations, conflicts about the child's lack of ability, etc. These are all environmental stimuli that are needed. In addition, there are also somatic stressors, social stressors, cultural stressors, and so on. The stressors act on the body and can cause the human nervous system, endocrine system, immune system, etc. to be regulated by the cognitive system, thus causing changes in the physical and mental behavior of the person.

The pathogenesis of BPD is complex, and gene-environment interactions can increase the disease rate in patients with BPD predisposition [10]. By compiling the literature, many studies have shown that traumatic childhood experiences may be an important predisposing factor for BPD [11]. Childhood horrific memories include physical violence, psychological violence, emotional neglect, and other abuses, and children with traumatic experiences suffer irrecoverable damage to their cognitive and emotional systems, which accompany the journey of growth, repeatedly superimpose misperceptions, and exacerbate negative emotions, and are more common in patients with borderline personality disorder. People with this personality illness often suffered repeated, prolonged abuse (sexual or psychological) in childhood. It may also involve neglect, where the wants and needs of the infant or child are not taken seriously, and possibly intense verbal, physical violence. Fear of abandonment in borderline personality patients is associated with separation from one parent or early emotional neglect. Abandonment anxiety is also related to mothers' attitudes toward them: they are too close to their children, even aggressive, to make them independent and self-sufficient (because of their own fear of abandonment), or too distant from their children, even

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abandoning them (because of their own fear of emotional closeness), or both (unpredictable mothers). Yu et al.showed that people with borderline personality disorder had more traumatic childhood experiences than normal controls and that emotional abuse, sexual violence, emotional maltreatment, and physical neglect were positively linked with symptoms of borderline personality disorder [12]. In addition, the absence or early separation of family members and inappropriate parenting styles are also factors that contribute to the onset of borderline personality disorder.

3.2. Environmental Factors

3.2.1. Influence of Growing Up Environment on the Development of BPD

Childhood trauma is heavily tied to BPD. Based on a comprehensive study of 97 BPD-related research, 71.1% of BPD patients had at least one past childhood traumatic experience, mainly physical neglect (48.9%), followed by emotional abuse (42.5%), physical abuse (36.4%), sexual violence (32.1%), and emotional maltreatment (25.3%)[13]. Patients with BPD were 13.91 times more likely than healthy controls to report childhood trauma and 3.15 times more likely than those with other psychiatric illnesses, such as emotional problems, schizophrenia, and other mental conditions [13]. Based on the above, the impact of multiple childhood traumas to the development of BDP will be analyzed.

According to the DSM-5, BPD has several typical clinical features, including emotional instability and self-harm. These factors are created by different traumatic childhood experiences.

3.2.2. Emotional Instability of the Parents

Having emotionally unstable parents is one of the traumatic childhood experiences that people with BPD may have. Catalan et al. found that parents of BPD patients tend to have poorer emotional control [14]. They only resort to simple and rough parenting styles such as opposition, reprimand and punishment. This leads to the inability of people with BPD to form stable attachments with their parents. A secure attachment relationship increases the sense of security, provides support, and reduces distress; however, for individuals with BPD who have emotionally unstable parents, they are frequently subjected to childhood trauma and, and, as a result, are typically unable to build strong ties. Therefore, they are preoccupied with fear of interpersonal rejection or desertion. When close people depart, in order to avoid abandonment or separation, people with BPD have emotional outbursts - emotional instability is one of the main characteristics of people with BPD [15].

3.2.3. Family Perspective: Childhood Sexual and Physical Abuse

Childhood sexual and physical abuse is associated with the development of BPD. Patients with BPD are significantly more likely to be suicidal relative to other psychiatric disorders. A prospective study of 837 patients with BPD found that the average suicide rate in BPD was 2% to 5%, with recurrent suicidal ideation and behavior nine times higher than in other psychiatric disorders [16]. Links et al. conducted 12 months of dialectical behavioral therapy (DBT) for patients with BPD and found that patients exposed to sexual abuse in childhood were more likely to make suicide attempts during treatment, and this result was again validated at 2-year follow-up [17]. Alberdi-Paramo et al. found that most patients reported traumatic experiences such as childhood sexual abuse, physical abuse, early separation from parents, maternal depression, or parental alcoholism [18] .

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3.2.4. Social Perspective: Low Education Level

Low education levels may be associated with the development of BPD. Low levels of education are strongly associated with impulsivity. This is also a prominent characteristic of BPD, particularly in terms of urgency and a lack of planning and consistency. For instance, people with BPD typically act impulsively in the face of adversity and do not consider the ramifications of their behaviors. They are unable to focus on their task and frequently experience feelings of loneliness and weariness [19]. Barker et al. found that people with BPD are more likely to accept lower rewards that are immediately available and less willing to wait for higher rewards that are Barker et al. Similarly, patients with BPD showed a higher probability of payout, with a preference for more certain or immediate rewards without considering the consequences [20] .

3.2.5. Diverse Childhood Traumatic Experiences

Practically, people with BPD experience childhood traumas that are often individualized and diverse, and these traumas can lead to the development of non suicidal self-injury (NSSI). NSSI is a recurrent, planned, and socially unacceptable self-injurious behavior that occurs in people with BPD without suicidal intent. Statistics from a study by Merza et al. show that more than 90% of BPD have engaged in NSSI behaviors, and the common self-injurious methods are cutting, scratching, and hitting, followed by burning, biting, head banging, hair scratching, and nail biting, and most patients use more than one self-injurious method [21]. Alberdi-Paramo et al. defined severe and frequent [(75.0±28.4) times / lifetime] NSSI as super self-injurious behavior [18]. Such severe self-injurious and self-injurious behaviors may be the result of multiple factors, including family factors such as incest, periodic sexual abuse, parental over-interference, and overprotection.

Left-behind children, as a social problem to be solved, also contribute to the occurrence of BPD. A study by Lan et al. found that the more stressful the life faced by rural left-behind children, the more likely they were to be accompanied by severe depressive mood and self-injurious behaviors[22]. The reason for this is that parental emotional neglect makes left-behind children's self-respect level and tend to adopt a negative and avoidant approach when facing difficulties, which eventually turns into frequent. The reason is that parental emotional neglect lowers the self-esteem of left-behind children, and they tend to adopt a negative and avoidant approach when facing difficulties, which eventually leads to frequent NSSI.

The intrusion or arousal of memories associated with childhood trauma can cause peak distress in BPD patients, leading to the utilization of NSSI to prevent burdensome experiences and ideas and to handle trauma-related aversive emotions [23]. However, instead of emotional regulation, avoidance strengthens the link to the object of deterrence, and this vicious cycle often leads to frequent self-injurious behaviors. A research by Vega et al. discovered that BPD patients with NSSI-associated behaviors had changed reward processes, with increased orbitofrontal cortex activation and decreased functional connectivity between the left orbitofrontal cortex and the right para-hippocampal gyrus after NSSI stimulation, further suggesting that NSSI is a way to manage negative emotions in BPD patients with the aim of relieving tension, anxiety, fear anger, depression, and other negative emotions, thus obtaining a rewarding effect [24].

4. Treatment

Before 1990, the scholars generally agree that the treatment of BPD should be based on psychological counseling, supplemented by medical therapy. It is worth mentioning that, according to Kernberg, the treatment of BPD is not only lengthy-which can reach several months or even years, its cure rate is also low [25]. These characteristics of BPD not only make patients with BPD

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are often regarded as “difficult” to interact with, but also make some therapists more willing to pay attention to the problems on Axis I (depression, etc.), as it is easier to treat. But because of the presence of Axis II (personality disorders, etc.), such treatments are not very effective.
Fortunately, with the development of psychiatry, the value of cognitive behavioral therapy and medical therapy has been proved, and the treatment of BPD has also begun to develop towards diversification. Although different schools have different opinions on the treatment of BPD, there is a consensus: the therapists should have high ability to manage, to reproduce the intervention that has been demonstrated to be beneficial in study settings. The therapist also needs to be mindful of their own countertransference, they need help the patient regulate extreme emotions, and let the patient know that self-harm is unhelpful.

4.1. Medical Treatment

There is still considerable controversy in the medical treatment of BPD. As the main effect of most drugs is to reduce impulsivity, it has no obvious effect on diseases which cause emotional instability such as BPD. Parmar and Kaloiya also finds widespread irrational drug use in people with personality disorders [26] . But there are also some people who support medical treatment. Even put aside the medical value, as a typical symbol of "being treated", medicine may bring psychological comfort to patients.

Scope of medical treatment for BPD should be limited to second generation antipsychotics. Although according to The Australian National Health and Medical Research Council (2016) and UK National Institute for Health and Care Excellence (2009), selective serotonin reuptake inhibitors should not be approved as treatments for BPD. Selective serotonin reuptake inhibitors (SSRI) is still used as the main medicine to treat borderline symptoms of BPD, and depressive symptoms that BPD patients often have. But SSRI are far less effective for BPD than they are for typical depression.

In addition to depression, impulsivity and aggression are also part of the distress. Low-dose inhibitors can be used to treat the impulsivity symptoms of BPD. But because of its side effects, such as gaining weight, inhibitors will not be the best choice for patients.

Due to the lack of awareness of the limitations of drugs today, doctors often misjudge the medical treatment of BPD. Regrettably, most current medical treatments for BPD are not based on randomized controlled trial. Blind use of medicines as the main route of treatment may increase the suffering of patients.

4.2. Non-medical Therapy

4.2.1. Psychodynamic Therapy

Psychodynamic therapy was developed by many famous psychologists. Till today, it is still one of the main ways of BPD treatment. It encourages patients to share their real thought and feeling with the therapists, to find out the root cause of the problem. By using clarification, confrontation, interpretation, transference interpretation to treat the patients.

Clarification: let patients explain the blur, confused, self-contradictory part of the files.

Confrontation: address inquiries the self-contradictory, disharmonious part to the patients. It should be done after the clarification.

Interpretation: to bring to consciousness a subconscious meaning, source, history, pattern, or cause of a mental event, typically requires multiple interventions.

Transference Interpretation: allow the patient to project his past feelings and thoughts about some important people in his life onto the therapist. It is worth mentioning that this therapy

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particularly tests the professionalism of the therapist. This approach is also high risk and high reward.

Stevenson and Meares demonstrated that patients with BPD can benefit from psychodynamic therapy[27]. But the premise of such good results is that this dynamic psychotherapy should be highly structured. Numerous past failures have demonstrated that treatments that are too unstructured can lead to patient exacerbations.

4.2.2. Supportive Therapy

In supportive therapy, the therapist will change his position: go to unconditional support to encourage the patient to vent and fully understand the patient's pain. To reduce the patient's psychological conflict and reduce the patient's pain. The therapist reasonably uses enlightenment, empathy, support and other conversational methods, and uses their professional knowledge and background to make the patient think that things are not too bad for them to bear, and to help the patient recognize the problem and change their mood, thereby promoting recovery process.

Li Jiangxue thinks, because it does not focus on analyzing the patient's psychology, but only emphasizes support and encouragement, people also call this therapy non-analytical therapy[28]. This therapy is generally suitable for BPD patients who have suffered a major psychological blow.

In this kind of therapy, it is worth noting that there must be targeted support, and the therapist cannot be vague and perfunctory; nor too obedient, which leads to the patient's psychological dependence. Lack of understanding of the patient can make the entire treatment ineffective.

4.2.3. Cognitive Behavioral Therapy

Leahy believes that different psychological disorders cause different cognitive distortions[29] . For example, the more common depression: patients tend to look at things more pessimistically, and have avoidance and fear of challenges beyond the normal threshold. Even with positive information, patients tend to treat information pessimistically.

The goal of therapy is to explain in detail the negative cognitive imagery of certain people or situations in the past that the patient has formed in childhood and bring them into concrete consciousness, thereby helping the patient reduce negative and destructive symptoms. The therapist will tell the patient how unreasonable that thinking is, and help correct it.

Cognitive behavioral therapy (CBT) is the preferred treatment for adolescents with BPD. In addition to this, observations suggest that CBT is also effective in treating less severe depression, anxiety, post-traumatic stress disorder (PTSD), etc.

4.2.4. Dialectic Behavioral Therapy

Dialectic behavioral therapy (DBT) is a CBT-based therapy developed by Linehan et al.[30]. It is mainly used for suicidal and self-harming behaviors in BPD patients. In the early treatment, Linehan et al. realized the core of CBT: "The therapist emphasizes to the patient the error in the patient's cognition", and the denial and criticism carried in it means that it is quite negative for some highly sensitive patients[30]. However, if the therapist only accepted the opinion of the patients, it would make the patient feel neglected and perfunctory. So Linchan et al. thinks the best therapy should be to find a balance between the two[30].

DBT stresses the importance of striking a balance between acceptance and change. According to Linehan, it is also a fusion of Western philosophy and Eastern Zen[30]. It is also a fusion of Western philosophy and Eastern Zen. Acceptance is similar to Zen “going with the flow”. This refers to the therapist's rational identification with the client from an emotional, cognitive, and

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behavioral standpoint. Simultaneously use behavioral analysis and problem-solving to improve patient cognitive and behavioral responsiveness declines.

The fly in the ointment is that there are no large-scale studies on DBT, and people do not know the long-term effects of DBT. Only DBT has been shown to be quite successful in reducing suicidal thoughts in patients.

5. Conclusions

By searching for information and comparing different authoritative documents, this article mainly discusses the influencing factors and the treatments of BPD. In the first part, this paper divides the influencing factors into two categories: the internal individual factors and the biological factors. About the internal individual factors part, this paper divides it into genetic factors, biological factors and gene-environment interaction to discuss. The environmental factors section discusses factors such as growing up environment and parents' ability to manage emotions, as well as sexual abuse. In the treatment part, this paper discuss both pharmacological and non-pharmacological treatments. This paper also focuses on several well-known non-drug treatment methods: such as psychodynamic therapy and supportive therapy, as well as CBT, DBT, etc. Hoped this paper can provide a convenient reference for relevant counseling professionals, and hope that there will be more practical experience to exchange with each other in the future.

The biggest flaw of previous studies is the lack of large-scale experiments and long-duration experiments. Hope that it will gradually make up for this in the future. BPD is still mysterious and worth thinking to people. Hoped that the future research on BPD will go further, so that more BPD patients can be cured.

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