BAŞKENT UNIVERSITY

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DEPARTMENT OF PSYCHOLOGY

MASTER'S IN CLINICAL PSYCHOLOGY

AFFECT, IMPULSIVITY, AND METACOGNITION IN BORDERLINE PERSONALITY DISORDER FEATURE

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CEMRE KARAARSLAN

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Tez Başlığı: Affect, Impulsivity, and Metacognition in Borderline Personality Disorder Feature

Yukarıda başlığı belirtilen Yüksek Lisans tez çalışmamın; Giriş, Ana Bölümler ve Sonuç Bölümünden oluşan, toplam 55 sayfalık kısmına ilişkin, 13/01/2021 tarihinde şahsım/tez danışmanım tarafından Turnitin adlı intihal tespit programından aşağıda belirtilen filtrelemeler uygulanarak alınmış olan orijinallik raporuna göre, tezimin benzerlik oranı %'15'tir. Uygulanan filtrelemeler:

1. Kaynakça hariç

2. ~~Alıntılar hariç~~

3. Beş (5) kelimeden daha az örtüşme içeren metin kısımları hariç

"Başkent Üniversitesi Enstitüleri Tez Çalışması Orijinallik Raporu Alınması ve Kullanılması Usul ve Esaslarını" inceledim ve bu uygulama esaslarında belirtilen azami benzerlik oranlarına tez çalışmamın herhangi bir intihal içermediğini; aksinin tespit edileceği muhtemel durumda doğabilecek her türlü hukuki sorumluluğu kabul ettiğimi ve yukarıda vermiş olduğum bilgilerin doğru olduğunu beyan ederim.

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ONAY

Tarih: 13/01/2021

Öğrenci Danışmanı Unvan, Ad, Soyad, İmza:

Dr. Öğr. Üyesi Elvin Doğutepe

To myself…

ACKNOWLEDGEMENTS

ÖZET

KARAARSLAN, Cemre. Sınır Kişilik Bozukluğu Özelliğinde Duygulanım, Dürtüsellik ve Metabiliş. Başkent Üniversitesi, Sosyal Bilimler Enstitüsü, Klinik Psikoloji Tezli Yüksek Lisans Programı, 2021.

Bu çalışmanın ilk amacı, Sınır Kişilik Bozukluğu özelliği (yüksek-düşük) ile pozitif duygulanım (düşük-pozitif) arasındaki ilişkiyi dürtüselliğin iki farklı boyutu olan öz bildirim dürtüsellik ve gecikmeyle ilişkili dürtüsellikte incelemektir. Çalışmanın ikinci amacı, cinsiyetin Sınır Kişilik Bozukluğu özelliği üzerindeki etkisini araştırmaktır. Bu çalışmanın son amacı ise, bireylerin dürtüsellik puanları (öz bildirim ve gecikmeyle ilişkili) ve üstbilişsel yetenekleri (eylem izleme aktivitesi ve işlevsiz üstbilişsel inançlar) arasındaki ilişkileri incelemektir. Araştırmanın örneklemini yaşları 18 ile 55 arasında değişen 236 (135 kadın ve 101 erkek) katılımcı oluşturmaktadır. Katılımcılar önce bilgilendirilmiş onam imzaladıktan sonra Demografik Bilgi Anketi, Sınır Kişilik Envanteri, Barratt Dürtüsellik Ölçeği-11, Gecikme İndirimi Görevi (Parasal Seçim Ölçeği), Üstbiliş Ölçeği-30 ve Görevle İlgili Üstbiliş Ölçeğini tamamlamışlardır. Sonuçlar, yüksek Sınır Kişilik Bozukluğu özelliğine sahip bireylerin, düşük Sınır Kişilik Bozukluğu özelliğine sahip bireylere göre daha yüksek öz bildirim dürtüsellik puanlarına sahip olduklarını; düşük olumlu duygulanıma sahip bireylerin, yüksek olumlu duygulanım durumunda olan bireylere göre daha yüksek öz bildirim dürtüselliğe sahip oldukları bulunmuştur; BPD özelliği yüksek ve olumlu duygulanımı yüksek olan bireyler, yüksek BPD özelliği ve düşük olumlu duygulanıma sahip bireylere göre daha dürtüsel seçimler yapmışlardır. Sınır Kişilik Bozukluğu özelliğinde cinsiyetin etkisine ilişkin sonuçlar, Sınır Kişilik Bozukluğu özelliğinde cinsiyet açısından anlamlı bir farklılık olmadığını göstermiştir. Ayrıca çalışmanın bulguları, gecikmeyle ilişkili artan dürtüselliğin, artan öz bildirim dürtüselliği ile ilişkili olduğuna işaret etmiştir. Dahası, üstbilişsel yeteneklerle ilgili olarak sonuçlar, Gecikme İndirgeme Görevi sırasında kararlarını daha karlı olarak değerlendiren bireylerin, gecikmeyle ilgili daha az dürtüsellik gösterme eğiliminde olduklarını; benzer şekilde, öz bildirim ölçümlerinde de daha az dürtüsel olduklarını göstermiştir. Ancak, işlevsiz üstbilişsel inançlar ile eylem izleme aktivitesi arasında herhangi bir ilişki bulunamamıştır.

Anahtar Kelimeler: Sınır kişilik özelliği, öz bildirim dürtüsellik, gecikme ilişkili dürtüsellik, duygulanım, metabiliş

ABSTRACT

KARAARSLAN, Cemre. Affect, Impulsivity, and Metacognition in Borderline Personality Disorder Feature. Başkent University, Institute of Social Sciences, Master's in Clinical Psychology, 2021.

The first aim of the present study is to examine the association of Borderline Personality Disorder feature (high-low), and positive affect (low-high) in two different dimensions of impulsivity namely self-report and delay-related. The second aim of the study is to explore effect of the gender on BPD feature. The last aim of the current study is to examine relationships among individuals' impulsivity scores (self-report and delay-related), and metacognitive abilities (monitoring action activity and dysfunctional metacognitive beliefs). The sample of the research consists of 236 (135 female and 101 male) participants whose ages ranged from 18 to 55. The participants firstly signed the informed consent, then completed the Demographic Information Questionnaire, Borderline Personality Inventory, Barratt Impulsiveness Scale-11, Delay Discounting Task (Monetary Choice Questionnaire), Metacognition Questionnaire-30, and Task-Related Metacognition Questionnaire. Results indicated that individuals who have high BPD feature also have higher self-report impulsivity scores than individuals with low Borderline Personality Disorder feature; individuals with low positive affect were found to have higher self-report impulsivity than individuals who are in a high positive affect state; individuals with high BPD feature and high positive affect made more impulsive choices than individuals with high BPD feature and low positive affect. Results regarding gender effect on Borderline Personality Disorder feature demonstrated that no significant difference in Borderline Personality Disorder feature in terms of gender. Also, it was found that increased delay-related impulsivity is associated with increased self-report impulsivity. Moreover, regarding metacognitive abilities, results showed that individuals who rate their decisions as more profitable during Delay Discounting Task tend to show less delay-related impulsiveness, similarly, they were found less impulsive in self-report measures. However, no association between dysfunctional metacognitive beliefs and monitoring action activity was found.

Keywords: Borderline personality feature, self-report impulsivity, delay-related impulsivity, affect, metacognition

TABLE OF CONTENT

LIST OF TABLES

LIST OF ABBREVIATIONS

AI   Attentional Impulsiveness
BIS-11   Barratt Impulsiveness Scale
BPD   Borderline Personality Disorder
BPI   Borderline Personality Inventory
CC   Cognitive Confidence in Metacognition Questionnaire-30
CSC   Cognitive Self Consciousness in Metacognition Questionnaire-30
DoG   Delay of Gratification
DD   Delay Discounting
LLK   Log Large k
LMK   Log Medium k
LOK   Log Overall k
LSK   Log Small k
MBT   Mentalization Based Treatment
MCQ-30   Metacognition Questionnaire-30
MIT   Metacognitive Interpersonal Therapy
MI   Motor Impulsiveness
NA   Negative Affect
NCT   Need to Control Thoughts in Metacognition Questionnaire-30
NPI   Non-Planning Impulsiveness
PA   Positive Affect
PANAS   Positive and Negative Affect Schedule
PB   Positive Beliefs in Metacognition Questionnaire-30
TRMQ   Task-Related Metacognition
UD   Uncontrollability and Danger in Metacognition Questionnaire-30

1. INTRODUCTION

Personality has always been an attractive topic of interest in the science of psychology and it is investigated by many researchers in different fields. In clinical psychology, one of the main areas related to personality is personality disorders. A personality disorder is defined as a prevalent and stable pattern of behavior, and it is characterized by distressful and damaging behaviors that deviate from the assumptions of the individual's society. Personality disorder appears in adolescence or early adulthood (Hashmani, 2017). Borderline Personality Disorder (BPD) is defined as one of the most prevalent, complicated, costly, and seriously destructive personality disorders. The prevalence rate of BPD in the general population is estimated to be 2% to 9%, and the rate is quite considerable in the inpatient psychiatric population which is estimated to be 40% to 44% (Ahluwalia Cameron et al., 2018).

Although BPD has been evaluated as "untreatable" for a long time, due to the large body of research and etiology, diagnosis, and treatment of the disorder. clinical investigations, the situation is not so black as it was painted. But still, ongoing research and clinical trials contribute to the understanding of the disorder.

Impulsivity is considered a core feature of the BPD. According to the diagnostic criteria of the disorder, BPD patients have impulsive behaviors, and these behaviors are potentially self-damaging such as spending, sex, substance abuse, risky driving, and binge eating (American Psychiatric Association, 2013). However, impulsivity is a multidimensional concept, and there are several ways to investigate impulsivity including behavioral and self-report assessments. One of the common procedures to examine impulsivity is self-report measurement tools which provide knowledge of trait-like impulsivity (Meda et al., 2009). Another important dimension of impulsivity is delay-related impulsivity which aims to measure impulsivity in terms of the reward-based decision-making process (Mobini et al., 2007). What we know about BPD impulsivity is largely based upon studies that were conducted with self-report (trait-like) impulsivity. As broadly discussed below, although a considerable amount of literature has been published on the behavioral assessment of impulsivity in BPD, there is a lack of information regarding the comparison between delay-related and trait-like impulsivity in the same design. The first aim of the study is to compare these two impulsivity measures in terms of BPD features. Also, even though it has since been established that affect has a key role in BPD impulsivity, previous studies have emphasized the role of the negative affect. To clarify the impacts of BPD feature and current affect on

impulsivity (both delay-related and self-report), the current study aims to investigate the relationship between BPD feature, positive affect, and impulsivity. Lastly, in light of the relevant literature which emphasizes the importance of metacognitive abilities in impulsivity, investigating the relationship between impulsivity and metacognitive abilities is another purpose of the current study.

In the following sections, firstly, personality disorders, and BPD was introduced. Secondly, the key role of impulsivity in BPD, self-report, and delay-related impulsivity in BPD were discussed, and the relationship between affect and impulsivity was explained. Finally, the relevance of metacognition with impulsivity was stated. Furthermore, the association of a variable with other variables was stated in their own sections. The purpose significance and hypotheses of the study were suggested in the context of relevant literature.

1.1. Personality Disorders

The personality disorder is defined by DSM-IV-TR as "an enduring pattern of inner experience and behavior that deviates markedly from the expectations of the individual's culture, is pervasive and inflexible, has an onset in adolescence or early adulthood, is stable over time, and leads to distress or impairment" (American Psychiatric Association, 2000, p. 685).

According to DSM-V, personality disorders are categorized into three groups and each group is constructed based on descriptive similarities in the nature of the disorder (American Psychiatric Association, 2013). Cluster A is characterized by odd and eccentric features, and it includes paranoid, schizoid, and schizotypal personality disorders. Cluster B is characterized by emotional, dramatic, and erratic features, and it includes antisocial, borderline, histrionic, and narcissistic personality disorders. Cluster C is characterized by anxious and fearful features, and it includes avoidant, dependent, and obsessive-compulsive personality disorders. Borderline Personality Disorder (BPD) takes place in the dramatic/erratic cluster (Cluster B). Instability of the interpersonal relationships, sense of self, and affect have been identified as core characteristics of the disorder. Additionally, impulsivity is defined as one of the important features of BPD (American Psychiatric Association, 2013).

1.2. Borderline Personality Disorder and Its Conceptualization

Diagnostic criteria of the BPD are defined as follows by DSM-V (American Psychiatric Association, 2013, p. 663):

"A pervasive pattern of instability of interpersonal relationships, self-image, and affects, and marked impulsivity, beginning by early adulthood and present in a variety of contexts, as indicated by five (or more) of the following:

1. Frantic efforts to avoid real or imagined abandonment. (Note: Do not include suicidal or self-mutilating behavior covered in Criterion 5.)

2. A pattern of unstable and intense interpersonal relationships characterized by alternating between extremes of idealization and devaluation.

3. Identity disturbance: markedly and persistently unstable self-image or sense of self.

4. Impulsivity in at least two areas that are potentially self-damaging (e.g., spending, sex, substance abuse, reckless driving, binge eating). (Note: Do not include suicidal or self-mutilating behavior covered in Criterion 5.)

5. Recurrent suicidal behavior, gestures, or threats, or self-mutilating behavior.

6. Affective instability due to a marked reactivity of mood (e.g., intense episodic dysphoria, irritability, or anxiety usually lasting a few hours and only rarely more than a few days).

7. Chronic feelings of emptiness.

8. Inappropriate, intense anger, or difficulty controlling anger (e.g., frequent displays of temper, constant anger, recurrent physical fights).

9. Transient, stress-related paranoid ideation or severe dissociative symptoms."

Although conceptualization of the BPD is an ongoing research area, the most influential theories and conceptualizations regarding the treatment process will be given in this section.

The phrase "border line" was first used by American psychoanalyst Stern (1938) in order to identify individuals who have not fitted neither psychotic nor neurotic categorization. Border line group patients are characterized as a group who are not responding to classical psychoanalytic treatments.

Kernberg (1967; 1975) proposed "borderline personality organization" and provided one of the well-established frameworks for BPD. According to Kernberg's conceptualization, temperament has a crucial impact on borderline personality organization. His term

temperament refers to an innate feature: intense emotional reactivity and difficulty to regulate the intensity. Also, the disintegration of the self-concept is a key component for the borderline personality organization, and individuals who have borderline personality organization have a lack of ability to differentiate their own and others' feelings, and their attempt to regulate intense emotions has depended on other people. Consequently, a stable and a continued sense of self could not be developed. Mostly used defense mechanisms in borderline personality organization are primitive defenses such as splitting (Kernberg, 1975). Splitting is an immature form of defense that has developed because of distressing contradictory feelings and consists of polarized opinions of oneself and others. For instance, individuals using splitting defense will idealize someone like he/she is all good and then devalue someone as the all-bad person (Boag, 2017). This example can be viewed as an illustration of the unstable sense of self and others.

The other outstanding perspective for BPD was introduced by Masterson (1976), in light of Masterson's perspective; stage of the separation- individualization has a vital role in the development of the BPD. In the case where children have been experienced a developmental crisis concerned with individuation, if the caregiver cannot provide the necessary support for solving the crisis, a feeling of fear of abandonment has emerged. Fear of abandonment includes some components namely depression, anger, panic, guilt, passivity, and helplessness, emptiness, and void. All these components are defined by Masterson as "the six horsemen of the apocalypse" and the functionality of the person depends on the coping styles to deal with these feelings (Masterson, 1976). After a short period, the term "borderline" is used by DSM-III as a personality disorder diagnosis for the first time (APA, 1980).

Another well-known model of the BPD is proposed by Linehan (1993), according to her Biosocial Model, the formation of the BPD could be considered as the result of interaction between genetic predispositions and environmental factors. In other words, having a biological tendency for emotional vulnerability and growing in an adverse childhood environment such as having abusive or neglectful parents are contributed to the development of the BPD. She suggested that emotion dysregulation is the fundamental component of the disorder, and this dysregulation closely linked with three features that BPD patients have: a) increased sensitivity to emotional stimuli, b) being experienced emotions extremely intense, c) having difficulty returning to emotional baseline (Linehan, 1993). In addition to emotion dysregulation, interpersonal, self, behavioral, and cognitive dysregulation are included as four other dysfunctionality areas for identifying people with BPD (Salsman & Linehan, 2012).

More recently, the mentalizing model of the BPD proposed by Fonagy and Bateman (2008) can be considered as a multifactorial model. The model suggested that genetic vulnerabilities, some dysfunctionality of neuropsychological mechanisms especially in affective regulation, limbic system, executive control, and psychosocial factors such as childhood traumas, and disruptions of the attachment relationships contribute to the development of the mentalizing dysfunctionality overall. The mentalizing capacity provides to comprehend a person's own mental state and others'. This capacity can be either reduced or unstable in BPD patients and it can be considered as a core proportion of the disorder (Fonagy & Bateman, 2008). As summarized above, it can be inferred from the conceptual framework of the BPD, the disorder has both biological and socio-developmental components in terms of the diagnosis and prognosis.

1.2.2. Etiology of the BPD

Although researchers have been attempting to explore the etiology of the BPD for many years, there is no consensus yet about the precise biological mechanisms underlying it. It has been suggested that both genetic mechanisms and environmental factors throughout childhood play a role in the genesis of the BPD (Cattane et al., 2017). Consequently, BPD can be considered as a disorder that has multifactorial etiology (Bandelow et al., 2005; Ruocco & Carcone, 2016).

1.2.2.1. Genetic and neurobiological factors

The heritability of the BPD has been estimated to be 40% to 42% (Amad et al., 2014; Distel et al., 2007). A 10-year longitudinal study conducted by Bornovalova and colleagues (2009) aimed to examine the course and genetic aspect of the BPD features. Participants were female twins and they have followed adolescence (age 14) through adulthood (age 24). The result of the study showed that genetic factors highly affect both the stability and change of BPD features. Another study that examined the heritability of BPD features reported that BPD features are genetic in origin (Distel et al., 2007). In the study, twin participants across three different countries (Netherland, Belgium, Australia) were examined in terms of BPD features. The authors indicated that 42% of the variance in the BPD feature can be explained by additive genetic influences. Furthermore, this genetic influence was found to be similar across the three countries.

A review study conducted by Lis and colleagues (2007) showed that studies conducted with neuroimaging techniques reported BPD related abnormalities in the brain. Positron Emission Tomography (PET) studies have been shown that dysfunctionality of the limbic regions and regions responsible for emotion regulation and control are associated with emotional dysfunctionality (e.g., emotional instability, controlling emotions). Also, it was stated that abnormalities in limbic regions related to the negative emotions were found in Magnetic Resonance Imaging (MRI) studies. Similarly, functional Magnetic Resonance Imaging (fMRI) studies have been supported these findings indicating abnormalities associated with emotion-related processing in the BPD patients such as hyper-metabolism in the amygdala, activation abnormalities in the prefrontal cortex, and fusiform gyrus (Lis et al., 2007). According to the result of another study which is a systematic review (Ruocco & Carcone, 2016), brain regions responsible for interaction between cognitive functioning and emotion regulation are disrupted in BPD patients compared to healthy subjects. Especially in terms of the negative emotions, BPD patients have neural dysfunctionality in cognitive control regions such as the anterior cingulate cortex, inferior frontal gyrus, and inferior parietal sulcus.

Also, some research demonstrated abnormalities in BPD related neurometabolites. For example, reduced serotonergic activity, and increased responsivity of cholinergic mechanisms are found to be associated with BPD symptoms such as impulsive aggression and affective instability (Skodol et al., 2002). More recently, it was suggested that increased cortisol level, hyperactivity of the hypothalamic-pituitary-adrenal axis is associated with BPD pathology, and given that the reduced volume of the amygdala and anterior cingulate cortex in BPD patients seems to be related to the emotional dysfunctionality of the BPD those patients have. Also, it was indicated that individuals with BPD have dysfunctionality of the serotonergic system associated with their symptoms such as impulsivity, aggression, and suicidality (Ferreria et al., 2017).

It appears to be clear that BPD symptoms are associated with biological mechanisms. Especially dysfunctionality of the emotion-related process and cognitive control are considered as substantial brain abnormalities.

1.2.2.2. Environmental factors

The development of the BPD is not only dependent on genetic factors but also is influenced by environmental experiences. For example, childhood traumas have been identified as one of the major contributing factors for the development of the BPD (Annemiek

van et al., 2011; Ibrahim et al., 2017). In their study, Ball <u>and</u> Links (2009) reported some evidence supporting the causal relationship between childhood traumas and BPD. Another comprehensive study indicated that abuse, neglect, instability of the early environment, and lack of protective factors might have a crucial role to play in the development of the BPD (Helgeland & Torgersen, 2004).

Moreover, a recent study showed that adverse childhood experiences are led to the dysfunctionality of the biological mechanisms associated with BPD such as in the hypothalamic-pituitary-adrenal axis, neurotransmitter and opioid mechanisms, and neuroplasticity. These findings also clearly demonstrate the role of the epigenetic in the BPD pathology (Cattane et al., 2017).

1.2.3. Clinical features of BPD

It has been known that approximately 10% of BPD patients are died by suicide (Paris, 2019), which could be considered as one of the reasons why BPD is defined as a seriously destructive disorder. Furthermore, BPD has a reputation as untreatable for many years (Choi-Kain et al., 2017), and still, it has been identified as a disorder that is difficult to treat (Stone, 2016). Not surprisingly, BPD patients are encountered with serious stigmatization in clinical settings, and clinicians could not prefer to work with these patients (Black et al., 2011).

1.2.3.1. Prevalence and gender patterns

Up to now, there has been growing research focus on the gender patterns in BPD. According to DSM-IV-TR, the prevalence rate of diagnosed BPD is higher for women compared with men (American Psychiatric Association, 2000). Previous research also suggested the same difference in gender. However, more recent findings reported no gender differences in terms of prevalence (Sansone & Sansone, 2011). It is possible to see completely different findings in terms of the gender differences in BPD, such as higher prevalence for women (Widiger & Trull, 1993), no gender differences (Grant et al., 2008), or higher prevalence for men (Coid et al., 2006). In short, relevant literature has been reported conflicting results.

1.2.3.2. Comorbidity

A large and growing body of literature has attempted to investigate the comorbidity of BPD, and it has been demonstrated that BPD has a high rate of comorbidity with other mental

disorders. For example, Kaess and colleagues (2013) reported that while mood, eating, dissociative, and substance use disorders are the most common comorbid disorders with BPD in Axis I; Cluster C personality disorders are the most common comorbid disorders in Axis II. Another study was pointed out the comorbidity of the other personality disorders with BPD (Palomares et al., 2016). According to the results of the study, 87% of the BPD patients in the sample of the study had another personality disorder comorbidity. More strikingly, it was reported that approximately half of the sample had at least three comorbid personality disorders, and the most common comorbid personality disorders with BPD were Cluster A (paranoid) and Cluster C (obsessive and avoidant).

A study analyzing data from the 34.481 participants in the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC) demonstrated that 84.8% of the BPD patients had lifetime anxiety disorders such as agoraphobia, generalized anxiety disorder, post-traumatic stress disorder; 82.7% of the BPD patients had lifetime mood disorders such as major depressive episodes and mania; 78.2% of the patients who have BPD diagnosis had lifetime substance use disorder at the same time. Also, the study showed that other types of personality disorders such as schizotypal, narcissistic, and dependent are also associated with having BPD diagnosis (Tomko et al., 2014).

More recently, it was emphasized that BPD patients have a high risk for depressive disorder, bipolar disorder, anxiety disorder, substance use disorder, and sleep disorder than individuals without BPD (Shen et al., 2017). Slotema and colleagues (2018) indicated that 70% of patients diagnosed with BPD have comorbid anxiety disorders and 38% of the BPD patients have comorbid psychotic disorders.

Furthermore, the diagnostic similarity of the BPD and bipolar disorder is also worth taking into consideration. Despite the fact that BPD and bipolar disorder are two distinct mental disorders with each other, their differential diagnosis involves a variety of common features. Although it has been widely accepted that affective instability and impulsivity are characterized as fundamental common symptoms for each disorder, the association between these two disorders has not yet been explained in a complete manner (Antoniadis et al., 2012). Zimmerman and colleagues (2020) suggested that patients with bipolar disorder also might meet the criteria for BPD. Despite the similarity in the diagnosis, a key fundamental difference has been identified to make a separation. It has been suggested that temporary mood shifts occur as a response to interpersonal stressors in individuals with BPD, but in bipolar disorder,

8

the mood shifts are spontaneous and continuous at a certain level (Belli et al., 2012; Paris & Black, 2015). In other words, mood change in BPD is characterized by extreme responsivity to environmental factors (Gunderson & Phillips, 1991), and high emotional sensitivity to environmental stimuli (Sansone & Sansone, 2010).

1.2.4. Treatment

As mentioned before, some previous approaches characterize BPD as an un-treatable disorder. However, current applications used for the treatment of BPD patients are available. Even though medication has been proposed as one of the feasible treatment alternatives for BPD, studies are in doubt about the efficacy of the medications and indicate that careful attention should be given to pharmacotherapy for further investigation (Starcevic, & Janca, 2018). It was reported that there is a lack of evidence for claiming pharmacotherapy helps patients with BPD (Hancock-Johnson et al., 2017). A review study indicated that psychotherapy is an effective treatment for BPD and the most commonly used therapies are Dialectical Behavior Therapy (DBT) and Mentalization-Based Treatment (MBT) (Storebø et al. 2020). Similarly, Metacognitive Interpersonal Therapy (MIT) is another alternative applicable psychotherapy treatment of BPD patients (Dimaggio et al. 2015). DBT is considered as one of the most effective treatments for BPD (Stiglmayr et al., 2014) and it focuses on the unstable sense of self, chaotic relationships, fear of abandonment, emotional lability, and impulsivity in therapy sessions (May et al., 2016). MBT and MIT dwell mostly on the disturbed mentalizing/metacognitive ability and improving that capacity (Bateman & Fonagy, 2010; Dimaggio et al. 2015).

1.2.5. Association of BPD and BPD feature

In the BPD literature, studies are conducted based on both patients with a diagnosis of BPD and individuals having BPD features. Examples of these two samples are observable across different studies and methods (e.g., Chapman et al., 2008; Coffey et al., 2011; Links et al., 1999; Tragesser et al., 2008; Zeigler & Abraham, 2006). Zeigler-Hill and Abraham (2006) stated that examining BPD features as crucial as studying with a clinical sample of patients with BPD diagnosis. Several studies have reported that dysfunctionalities related to BPD are noticeable in individuals having high BPD feature such as poor academic accomplishment and social maladjustment (Bagge et al., 2004); higher levels of interpersonal concerns (Trull, 1995); unstable self-esteem, and low self-image (Zeigler & Abraham, 2006); and impulsivity

related dysfunctionality (Peters et al., 2013). Also, BPD features were found to be associated with emotion regulation dysfunctionality, dissociative experience, and suicidal ideation.

As clearly reported by researchers, not only studies conducted with clinical patients who have BPD diagnosis, but also studies carried out with non-clinical sample by investigating BPD feature is a crucial part of understanding the disorder.

1.3. Impulsivity

Impulsivity has no consensual definition or there is no specified measurement tool to assess the construct (Kocka & Gagnon, 2014). However, impulsivity has been investigated and conceptualized by different perspectives for many years. For example, Eysenck (1993) emphasizes unplanned risky behaviors and quick decision making in impulsivity. In Barratt's (1995) definition, impulsivity has three distinct components: motor, cognitive, and non-planning. Motor impulsivity represents taking an action without thinking, cognitive impulsivity represents quick cognitive decision making and the non-planning factor is related to being unable to have an orientation toward the future. Based on this conceptualization, he developed a measurement tool for impulsivity, Barratt Impulsiveness Scale (Patton et al., 1995) and the scale indicates six first-order dimensions (attention, motor, self-control, cognitive complexity, perseverance, and cognitive instability) and three second-order dimensions (attentional, motor, and non-planning impulsiveness) (Bakhshani, 2014).

As mentioned above, impulsivity is considered a core feature of BPD. According to the diagnostic criteria of the disorder, BPD patients have impulsive behaviors, and these behaviors are potentially self-damaging such as spending, sex, substance abuse, risky driving, and binge eating (American Psychiatric Association, 2013).

As Gagnon (2017) stated in his comprehensive review study, Moeller and colleagues (2001) have developed an impulsivity conceptualization and aimed to create a bridge between the research and the diagnostic criteria. They defined the term impulsivity as "a predisposition toward rapid, unplanned reactions to internal or external stimuli without regard to the negative consequences of these reactions to the impulsive individual or to others" (Moeller et al., 2001). In their perspective, to be able to make a concise distinction between impulsive and non-impulsive patients an integrative approach is needed, and this approach must be the focus on all measurement types which are available for impulsivity (self-report studies, behavioral laboratory studies, and event-related potential studies). Behavioral measure of the impulsivity is mainly based on three different paradigms namely 1) punished and/or extinction paradigms,

2) reward-choice paradigms, and 3) response disinhibition/attentional paradigms (Ainslie, 1975; Dougherty et al., 1999; Matthys et al., 1998; Moeller et al., 2001).

As broadly explained above, impulsivity can be defined as a multidimensional concept, and it has a variety of assessments which includes both behavioral and self-report assessments. It was suggested that each of the measures might be related to different components of the construct, and relationships among these components are also crucial in terms of understanding the nature of impulsivity (Mobini et al., 2007).

1.3.1. Delay-related impulsivity

Delay Discounting (DD) is a common behavioral procedure for assessing reward-based delay-related impulsivity. Even though DD has been evaluated as a similar process with the Delay of Gratification (DoG) for many years, there are distinct differences between these two procedures (Reynolds & Schiffbauer, 2005). The famous self-regulation experiment, Mischel's "marshmallow test" is one of the well-known examples of the DoG (Mischel, 1974; Mischel et al., 1972). In the original procedure, there is one versus two marshmallows as two charming reward objects and child participants had to wait alone with these two rewards. Also, they instructed about how they can get a greater reward. If they will wait for enough for the return of the experimenter without eating, they will be receiving the larger reward; however, if they ring the bell for calling the experimenter back, they will have the smaller reward (Göllner et al., 2018). In summary, "self-control" or "willpower" in maintaining choices for delayed rewards is measured in the DoG procedure.

On the other hand, the DD procedure is originated from non-human animal studies and is based on the field of behavioral analysis (Reynolds & Schiffbauer, 2005). DD is conceptualized as the cognitive process that enables the person to compare and evaluate values between the immediate and delayed rewards (Loewenstein, 1988), and it refers to a reduction of the subjective value of a consequence when it is delayed (Baker et al., 2003). Procedures for assessing DD are based on initial-choice responses, and the focus of these procedures are mainly on the individual's hypothetical choices between monetary alternatives of delayed and immediate reward. DD procedures are aimed to assess the pattern of a gradual decrease in the value of a specific reward when a delay is added at the arrival of the reward. Considering two options like $5 and $10, in the equivalent situation, most people would prefer $10 over $5. Nevertheless, if the delivery of the $10 was delayed and this delay was gradually increased, the perceived value of the reward would begin to decrease and with the addition of an adequate

delay, a shift towards the smaller reward would occur. In this scenario, the delay time of the rewards would have an influence on the individuals' choices. Individuals might prefer $10 to $5 with a week of delay time but they might prefer $5 when the delay time of $10 is one year. People who decide to take a smaller reward in a shorter delay are considered more impulsive (Reynolds & Schiffbauer, 2005). As emphasized by Reynolds and Schiffbauer (2005), different aspects of the delay-related impulsivity are represented in DD and DoG paradigms. While the DD task is based or on the decision preference of primary value, the DoG procedure is primarily associated with the ability to maintain a choice.

As mentioned before, hypothetical monetary choices are presented to the subjects in the DD task. Considering the fact that hypothetical situations are not the same as real-life situations, researchers have investigated whether real and hypothetical money rewards are differentiated in terms of the DD task results. Data from several studies suggested that there were no significant differences between real / potentially real or hypothetical rewards (Johnson & Bickel, 2002; Lagorio & Madden, 2005; Madden et al., 2003; 2004; Odum, 2011). Therefore, not only because of being easy to apply but also having sound ecological validity, the DD task has become one of the useful assessment tools for measuring reward-based decision-making aspect of impulsivity.

1.4. Delay-Related Impulsivity in BPD

As stated by a systematic review study (Scholten et al., 2019), high DD rates were found to be associated with several psychopathologies such as eating problems (Amlung et al., 2016; Weller et al., 2008) gambling problems (Reynolds, 2006), alcoholism (Bobova et al., 2009; Mitchell et al., 2005), attention-deficit/hyperactivity disorder (Demurie et al., 2012; Jackson & MacKillop, 2016; Patros et al., 2016; Scheres et al., 2010), substance abuse (Bickel et al., 2014; Kirby & Petry, 2004; Landes, et al., 2012), risky sexual behaviors (Chesson et al., 2006). Considering the fact that impulsivity has a crucial role in all these psychopathologies, and BPD is one of the disorders related to serious impulsivity problems, investigating DD in BPD might be crucial to understand the nature of impulsivity in these patients.

1.5. Affect and Delay-Related Impulsivity

Another critical factor in investigations of the DD task is affect, which is also critical in the nature of the BPD. Affect is defined as a "collective term for describing feeling states like emotions and moods. Affective states may vary in several ways, including their duration,

intensity, specificity, pleasantness, and level of arousal, and they have an important role to play in regulating cognition, behavior, and social interactions" (Niven, 2013).

Studies which were conducted in the general population (without looking for psychopathological processes) highlighted that negative emotional states have a key role in delay-related impulsivity (Malesza, 2019; Worthy et al., 2014). For example, in a study conducted by Guan and colleagues (2015), it was suggested that negative priming causes a higher preference for a smaller but sooner reward. Another research conducted by Worthy and colleagues (2014) demonstrated that in the DD task, the high worry was found to be related to greater DD rates (higher delay-related impulsivity). According to the results of a more recent study, negative affect is found to be related to greater DD rates (Malesza, 2019).

On the other hand, some studies have emphasized that positive affect might also be important in delay-related impulsivity. For instance, Liu and colleagues (2013) indicated that positive affect is associated with choosing delayed rewards (lower delay-related impulsivity).

The findings of the relevant literature appear to be consistent. According to these studies, while positive affect is associated with being less impulsive in the DD task, negative affect is related to more impulsive choices. The underlying mechanism might be understandable in the frame of the "Emotion as Information" hypothesis (Clore & Huntsinger). It was stated that positive affect signals that the object of judgment is valuable, bringing with a positive interpretation, and negative affect signals that it lacks value, bringing with a negative interpretation; and then positive or negative value might influence a person's different decision making.

1.6. Delay Related Impulsivity and Affect in BPD

As mentioned in the conceptualization of the BPD section, affect-related dysfunctionality has a central role in BPD (American Psychiatric Association, 2013) and this dysfunctionality manifested itself in terms of impulsivity as well. For example, many theorists have proposed that BPD impulsivity is related to cope with emerged negative affect (Brown et al., 2002; Crowell et al., 2009; Vollrath et al., 1996). Crowell and colleagues (2009) stated that impulsivity is a kind of emotion regulation response in BPD toward negative and stressful emotions.

However, studies regarding delay-related BPD impulsivity and emotional state could not provide clear cut conclusions. Although until 2010, there are no studies that have been

done to directly investigate reward-based decision-making/delay related impulsivity in BPD patients, some studies addressed behavioral impulsivity in BPD. These studies emphasized that borderline patients had less advantageous preferences, and riskier decisions (Haaland et al., 2007; Kirkpatrick, et al. 2007; Lawrence et al. 2010). Also, studies that investigate the effect of emotional state in behavioral impulsivity and BPD mostly focused on negative emotions. For example, Chapman and colleagues (2008) investigated the role of negative emotionality in BPD impulsivity. The authors did not manipulate affect. Instead, the emotional states of the participants were determined by the Positive and Negative Affect Schedule. In the study, impulsivity was measured by the passive avoidance learning task. In this task, participants expected to inhibit their responses by learning from their previous punishments in the task. Results indicated that the high BPD group had a greater number of impulsive responses than the low BPD group and negative affect moderated the effect of BPD on impulsive responses. In other words, the high BPD group with a negative affect was less impulsive than the high BPD group with a low negative affect. Authors noted that different aspects of impulsivity might be related to emotions in different ways among persons who have BPD features (Chapman et al., 2008). Although the study provides affect examination on impulsivity, the administered task in the study was not investigated delay-related impulsivity.

Similar to studies that investigate role of affect in DD task with different samples, studies that examine the same relationship in the BPD sample were based on negative emotions. For example, in 2010, Lawrence and colleagues conducted research that directly focuses on DD task and impulsivity in BPD patients. The authors stated that BPD patients have a higher rate of discounting the delayed reward than the control group. Also, they induced rejection and anger feelings to investigate this manipulation on DD task and impulsivity. It was reported that after the affect induction, the rate of discounting did not change for the BPD group. However, the rate of discounting reduced for the control group. The last finding of the study which might be important in terms of understanding BPD impulsivity is the correlation between self-report impulsivity assessment and delay-related impulsivity. In BPD patients, trait impulsivity was found to be positively correlated with the rate of discounting in the DD task. Similarly, findings of the more recent study indicated that BPD patients had significantly more delay-related impulsivity, and after the stress induction, the rate of DD was the same (Krause-Utz et al., 2016). In another research conducted by Berenson and colleagues (2016) the BPD group, Avoidant Personality Disorder group, and healthy controls were compared in terms of delay-related impulsivity. The study demonstrated that the BPD group had higher

impulsivity than two other groups in the DD task. Also, stress induction was made in this study, results demonstrated that stress reactions were equally heightened in both personality disorder groups compared to the healthy group. However, the authors stated that they did not investigate the effect of stress in the DD task, suggesting that this investigation might be important for future studies (Berenson et al., 2016).

As outlined above, the findings of the studies have pointed out the role of negative affect. The effect of positive affect in delay-related impulsivity and BPD not sufficiently investigated. Given that patients with BPD are not simply reactive to negative affect, positive emotions are also important in the nature of the disorder (Beblo et al., 2013), investigating the role of positive affect in terms of the delay-related impulsivity in BPD might be beneficial.

Furthermore, a recent comprehensive review study conducted by Gagnon (2017) suggested that BPD patients have obvious deficits in impulse control based on the data from behavioral studies. Also, a failure to properly process feedback information and monitoring action might be associated with these deficits. Therefore, for reducing impulsivity, one of the effective strategies could be monitoring. From this point of view, an important cognitive process -metacognition- which includes processes of monitoring and controlling one's own knowledge, emotions, and actions (Hacker & Bol, 2004) seems to be crucial in terms of monitoring action in impulsivity.

1.7. Metacognition in BPD

Metacognition is defined as "the active monitoring and consequent regulation and orchestration of these processes in relation to the cognitive objects or data on which they bear, usually in service of some concrete goal or objective." (Flavell, 1976, p.232). As clearly stated by Flavell, metacognition requires operative monitoring and regulation across the multiple activities of information processing. Metacognitive abilities involve a core feature: knowing about one's own cognitions (Shimamura, 1994). However, there have been some terminological differences and inconsistencies with the definition of metacognition. The importance of making a clear definition of what metacognition refers to in a specific study has been highlighted because of the different usage by the different perspectives.

For example, the term mentalizing is one of the most frequently used concepts associated with and/or instead of metacognition (Semerari et al., 2003). It has been suggested that both concepts are overlapped in terms of having a definition that highlights the ability of

a person to focus on the mental states of themselves and others (Dimaggio & Lysaker, 2014; Ridenour et al., 2018). However, the main assumption of mentalizing suggests that attachment plays a key role in mentalizing capacity, whereas the role of attachment in metacognition is not considerable (Ridenour et al., 2018). For example, in the background of our early attachment relationships with caregivers the ability to mentalize is developed; we learn to know ourselves in the picture that we see mirrored by the other (Bateman & Fonagy 2016). Mentalization derives from psychoanalysis, attachment theory, the psychology of creation, and psychiatry, and refers to how people perceive their attitudes and other people's behavior (Freeman, 2016; Ridenour et al., 2018). In the current study, the term metacognition will be used in a manner that refers to an ability to understand the mental states of oneself and others throughout information processing and to have an insight into the quality of one's decision (Brever et al., 2013).

Also, metacognition is defined as an important component of mental health, and dysfunctionality in metacognition is found to be associated with mental disorders and psychopathology (Rouault et al., 2018). For instance, disturbance in metacognition was found to be related to several psychological disorders such as schizophrenia (Lysaker et al., 2011; Lysaker et al., 2019), obsessive-compulsive disorder (Hagen et al., 2017; Irak & Tosun, 2008), and personality disorders (Carcione et al., 2019; Dimaggio et al., 2007; Semerari et al., 2014). Like other personality disorders, metacognitive dysfunctionality is also associated with BPD (Dimaggio et al., 2007; Maillard et al., 2017). The main metacognitive dysfunctionality in BPD patients is having difficulty integrating states of mind and the associated process (Dimaggio et al., 2007). It has been suggested that the capacity to reflect on the internal mental states of the self and others is impaired in patients with BPD and increasing this capacity has contributed to symptomatic improvement in the patients (De Meulemeester et al., 2018).

Given the crucial impact of the metacognitive ability in BPD patients, in recent years, the importance of metacognitive training for the interventions of BPD has been pointed out and raised. In a general sense, metacognitive training interventions emphasize the instability, unstable sense of self, and dysfunctional social relationship patterns of BPD. These patterns are evaluated as associated with cognitive dysfunctions and information processing biases. Therefore, metacognitive interventions aim to improve individuals' awareness of their own cognitive biases (Schilling et al., 2018). MIT has been defined as an effective treatment for BPD, and it focuses on the improvement of the mental state, metacognitive functions, interpersonal problems, and evaluation skills during the therapy sessions (Magni et al., 2019).

For example, MIT emphasizes the critical distance from maladaptive interpersonal schemas, improvement of the mentalistic abilities, and helping individuals to acquire expanded understanding for their own patterns and actions (Dimaggio et al. 2015). In summary, improving metacognitive functionality could be viewed as a promising treatment for BPD patients.

1.7.1. Association of metacognition and impulsivity

As summarized in the prior section, disturbed metacognitive abilities are highly associated with BPD (Maillard et al., 2017). One of the most commonly used assessment tools for assessing metacognition is Metacognition Questionnaire-30 which was developed by Cartwright-Hatton and Wells (1997). Items of the MCQ-30 are grouped into five dimensions namely "positive beliefs", "cognitive confidence", "uncontrollability and danger", "cognitive self-consciousness" and "need to control thoughts". Metacognition Questionnaire-30 is designed to measure maladaptive/pathological metacognition. The scale is also a commonly used measurement tool in investigations of dysfunctional metacognitive beliefs and BPD (Jelinek et al., 2016; Walton 2010; Winter et al., 2019).

Furthermore, it was shown that metacognitive dysfunctionality measured by Metacognition Questionnaire-30 was associated with trait impulsivity in the non-BPD sample (Ermis & Icellioglu, 2017). However, due to the nature of the scale, it is not possible to directly investigate the effect of monitoring action activity component of the metacognition on impulsivity.

Some previous studies showed that metacognitive dysfunctionality might be related to both self-report and behavioral impulsivity in the non-BPD sample by using a task-related metacognition scale (Angioletti et al., 2020; Brever et al., 2013). In the study conducted by Brever and colleagues (2013), participants were asked to bet on their Iowa Gambling Task performance. The results showed that subjects with gambling problems were worse in terms of Iowa Gambling Task performance compared to control subjects. Besides, their metacognitive judgments about their performance were incorrect (Brevers et al., 2013). A more recent study conducted by Angioletti and colleagues (2020) examined individuals who have Parkinson's Disease with and without gambling problems. They administered the Iowa Gambling Task, self-report impulsivity questionnaire, and task-related metacognition questionnaire which was developed by the researcher and aims to make participants monitor their own performance. Their results showed that individuals who have Parkinson's Disease

with gambling problems had worse performance on the Iowa Gambling Task even though they reported they use an efficacious strategy on the task-related metacognition questionnaire. It should be noted that Iowa Gambling Task is a behavioral measure to assess impulsivity in terms of risk-taking decision-making (Upton et al., 2011). Hence, there is a lack of knowledge about the effect of monitoring action activity in delay-related impulsivity.

Given the important role of monitoring action in the context of impulsive behavior, examining the monitoring action dimension of metacognition appears to be beneficial in terms of enlightening the impulsivity mechanism. One of the efficient ways to investigate monitoring action in behaviors can be conceptualized as task-related metacognition. In this method, a person is asked to make a decision or complete a given task. After completion, he/she is also asked to make a judgment about his/her performance. Thus, as can be seen from several studies it is possible to make persons monitor their actions or decision and acquire information about their metacognitive knowledge (Desender et al., 2016; Fleming et al., 2010; Fleming & Lau, 2014; Wokke et al., 2017).

In summary, although some studies indicated that metacognition has an important role in impulsivity, the role of monitoring action activity which has been identified as a core component of the metacognition in impulsivity remains unclear regarding different impulsivity types. Also, the association between monitoring action activity and dysfunctional metacognitive beliefs is needed to be investigated.

1.8. Current Thesis

1.8.1. Aim

The first purpose of the current thesis is to clarify the association between BPD feature and positive affect in delay-related and self-report impulsivity. Therefore, the effects of BPD feature (high-low), positive affect (low-high) on DD task, and Barratt Impulsivity Scale-11 were investigated. The second aim of this thesis is to examine relationships among individuals' impulsivity scores, and metacognitive abilities. In accordance with this aim, individuals' impulsivity scores (DD task and Barratt Impulsivity Scale), and metacognitive abilities (Metacognition Questionnaire-30, and one item Task-Related Metacognition Questionnaire) were examined. By using Task-Related Metacognition Questionnaire and asking participants "How much do you think your choice is profitable?" it was aimed to make the participants think about and evaluate their actions. In other words, answering this question might make

them monitor their actions. Lastly, since studies that investigated the effect of gender on BPD had reported mixed results, it was aimed to investigate the gender effect on BPD feature.

1.8.2. Hypotheses

In the current study, based on the literature and in line with the aims of the present study, some main and an exploratory hypothesis were suggested.

1. The effect of the gender will not differentiate on BPD feature (Hypothesis 1).

2. There will be a positive correlation between the DD score and the Barratt Impulsiveness Scale (Hypothesis 2).

3. There will be a positive correlation between DD score and one item Task-Related Metacognition Questionnaire (Hypothesis 3).

4. There will be a positive correlation between Metacognition Questionnaire-30, and one item Task-Related Metacognition Questionnaire (Hypothesis 4).

5. Self-report and delay-related impulsivity will differ in terms of both BPD feature and positive affect (Hypothesis 5).

a) Individuals who have high BPD feature will be more impulsive in self-report impulsivity (Hypothesis 5a).

b) Individuals who have high BPD feature will be more impulsive in delay-related impulsivity (Hypothesis 5b).

c) Individuals with lower positive affect will be more impulsive in self-report impulsivity (Hypothesis 5c).

d) Individuals with lower positive affect will be more impulsive in delay-related impulsivity. (Hypothesis 5d).

e) Individuals who have high BPD feature and low in positive affect will be more impulsive than individuals who have high BPD feature and high in positive affect in delay-related impulsivity (Hypothesis 5e).

1.8.3. Importance

This thesis aims to investigate the relationships among BPD feature, positive affect, impulsivity (self-report and delay-related), and metacognition (pathological and monitoring action activity) and it has 3 importance. First of all, although it has been known that BPD is associated with higher-level impulsivity there is no study that investigates BPD impulsivity with both self-report and DD tasks at the same time in the Turkish sample. As the aim of the current study is to compare these two different types of impulsivity assessment in BPD, the results of the study may provide a new insight for future research by demonstrating similarities and differences of these assessment tools in terms of the BPD impulsivity in a Turkish sample. Secondly, due to the lack of clear-cut conclusions regarding affect and BPD impulsivity, investigating positive affect on delay-related and self-report impulsivity measures may contribute to a better understanding of BPD impulsivity. Additionally, as far as our knowledge, there is no study that investigates impulsivity, task-related metacognition, and pathological metacognitive beliefs in the same design. Thus, the findings of the current study may provide new insight not only understanding BPD impulsivity but also impulsivity mechanism in general population.

2. METHOD

2.1. Participants

The result of the power analysis conducted with G*Power 3.1 Software (Faul et al., 2007) indicated that the current study requires 242 participants in total to achieve a .025 effect size and .80 power with .05 α error probability.

Being aged between 18 and 55 was defined as inclusion criteria; being at least a high school graduate, having a psychiatric/neurological diagnosis and regular use of prescription medication were defined as exclusion criteria. The sample of the study consisted of 236 participants. No incentives were provided for participation. Participants were recruited by an online survey platform namely Qualtrics, the link to the survey was announced on social media which can be accessed through mobile phones and computers. Among all participants, 135 (57.2%) were female and 101 (42.8%) were male. The age of the subjects ranged from 18 to 55 ($M = 27.00$, $SD = 8.56$). 40.3% of the participants were high school graduates, 45.3% of participants were university graduates, and 14.4% of participants were postgraduates (Table 1).

Table 1. *Gender and Education Characteristics of the Participants*

Variables	Participants (N)	%
Gender		
Female	135	57.2
Male	101	42.8
Education Level		
High school	95	40.3
University	107	45.3
Postgraduate	34	14.4

2.2. Measures

2.2.1. Informed Consent Form

Informed Consent Form is a tool developed by researchers in order to explain aims of the study, general instructions during the measurements, and participants' rights and confidentiality. The informed Consent Form can be seen in Appendix 1.

2.2.2. Demographic Information Form

Demographic Information Form is an assessment tool developed by researchers to determine participants' socio-demographic characteristics (e.g. age, gender, education information, diagnosis status, and medication status). Demographic Information Form can be seen in Appendix 2.

2.2.3. Task-Related Metacognition Questionnaire (TRMQ)

Task-Related Metacognition Questionnaire was developed by researchers to measure participants' evaluations about their own choice, in other words, task-related metacognition. The scale consists of one item *(You were asked to make a choice between two monetary rewards for the task you just completed. How profitable do you think your choices were?*) on a 5-point Likert-type scale (*1 "completely non-profitable*" to *5 "completely profitable*"). The scale was administered to the participants after the completion of 27 items in the DD task. TRMQ can be seen in Appendix 3.

2.2.4. Borderline Personality Inventory (BPI)

Borderline Personality Inventory was developed by Leichsenring (1999), and the scale was constructed based on Kernberg's theory of personality organization (1984) which emphasizes identity confusion, primitive defense mechanisms, and disturbance on reality reasoning in BPD. BPI is a self-report inventory that consists of 53 items, and it evaluates the participants by true/false answers. Each question selected as "*true*" by the participants equals 1 point and the others are evaluated as 0 points. The last two items of the questionnaire are only used for purpose of gathering clinical information. Thus, the first 51 questions are included in the calculation, and the total score from the scale is calculated with the sum items marked as true. There is no reverse item in the questionnaire. Higher scores indicate higher BPD feature. The cut-off point of the original scale was indicated as 20 points. Leichsenring (1999) proposed that according to the results of multiple studies, the cut-off score mentioned above can be used in the diagnostic process of borderline personality organization.

Turkish adaptation of the scale was conducted by Aydemir et al. (2006), and the scale is the only measurement tool that can be used in BPD assessment. The cut-off point of the scale was indicated as 15-16 in the Turkish adaptation. The Cronbach's alpha coefficient of the Turkish version was .92 for the whole group and .84 for the BPD group. It was indicated that the scale has acceptable levels of reliability and validity. BPI can be seen in Appendix 4.

2.2.5. Metacognition Questionnaire-30 (MCQ-30)

The questionnaire originally named Meta-Cognitions Questionnaire was developed by Cartwright-Hatton and Wells (1997) to measure beliefs about worry and intrusive thoughts and consists of 65 items. Short-form of the scale was constructed by Wells and Cartwright-Hatton (2004) and named Metacognition Questionnaire-30 (MCQ-30). The MCQ-30 includes 30 items and is a self-report measure with a four-point Likert scale (*1 = do not agree, 2 = agree slightly, 3 = agree moderately, 4 = agree very much*). A higher score indicates a pathological metacognitive activity. Items of the MCQ-30 are grouped into five dimensions namely "positive beliefs", "cognitive confidence", "uncontrollability and danger", "cognitive self-consciousness" and "need to control thoughts".

Tosun and Irak (2008) adapted the questionnaire into Turkish and it was indicated that MCQ-30 is appropriate for assessing metacognition in psychopathologies. The factor structure of the scale was found to be similar to the original scale. Items 1, 7, 10, 20, 23, and 28 were found to belong to the positive beliefs factor; items 8, 14, 18, 24, 26, and 29 were found to belong to the cognitive confidence; items 9, 22, 4, 16, 3, 11, and 2 were found to belong to the uncontrollability and danger factor; the items 5, 12, 17,19 and 30 were found to belong to the cognitive self-consciousness factor; the items 6, 13, 15, 21, 25, and 27 were found to belong to the need to control the thoughts factor. There were no reverse items on the scale. Cronbach's Alpha for the full scale was reported as 0.93. MCQ can be seen in Appendix 5.

2.2.6. Delay Discounting Task (DD Task) (Monetary Choice Questionnaire)

The Monetary Choice Questionnaire is a 27-item self-report questionnaire and was developed by Kirby and colleagues (1999) to measure delay-related impulsivity. The questionnaire has 27 items. In each item, individuals are asked to choose between a smaller, immediate monetary reward and a larger, delayed monetary reward. *("Would you prefer (a) $19 today or (b) $25 in 53 days?").* All the items in the questionnaire were divided into three groups based on the approximate magnitudes of the delayed rewards (small, medium, large):

In small magnitude items amounts of \$25, \$30, and \$35 are used; in medium magnitude items amounts of \$50, \$55, and \$60 are used; lastly, in large magnitude items amounts of \$75, \$80, and \$85 are used. This classification provides researchers to evaluate the size effect of the discount rate (Green et al, 1981; Kirby, 2009). Calculation of the person's discounting curve is based on the hyperbolic function given below (Kaplan et al., 2016; Mazur, 1987):

$$V = \frac{A}{1 + kD}$$

V = Smaller, immediate reward.

A = Large, delayed reward.

D = Delay time associated with A.

k = Rate of discounting (slope of the hyperbolic function)

k is typically ranged from 0.0 and 0.5, and a higher k-value indicates a higher-level of the discount rate (higher-level impulsivity). As supported by several adaptations and clinical research delay discounting is a useful and sound assessment tool in terms of investigating impulsivity-related behavior (Bickel et al., 2012; Critchfield & Kollins, 2001). Although the Monetary Choice Questionnaire is quite useful in terms of examining delay discounting, the scoring procedure of the questionnaire is too complex. To eliminate the complexation and make the questionnaire more advantageous, an automatic Excel-based tool was developed by Kaplan and colleagues (2016). For each participant, several discount rates (overall k, small k, medium k, large k) were calculated by this automatic scorer and it provides researchers to investigate delay-related impulsivity more easily. A higher overall k value indicates steep discounting. Moreover, Kaplan and colleagues (2016) stated that the validity check of the automating scoring tool indicated exactly matched findings with original developers Kirby's (2000) scoring. Consequently, the automated scoring tool was found suitable for the current study to calculate delay discounting/k scores. As recommended by authors, in order to obtain normal like distributions, log transformations of the values were used.

Additionally, by the reason of the original form of the Monetary Choice Questionnaire is English, it was translated into Turkish. In this process, like prior research conducted with different countries and languages, one difference was made, and \$ converted to TL (Cosenza et al., 2018; Liu et al., 2016). Original and Turkish forms of the questionnaires can be seen in Appendix 6 and 7.

2.2.7. Barratt Impulsiveness Scale, 11th version (BIS-11)

BIS-11 is a 30-item self-report questionnaire developed by Patton and colleagues (1995) to measure trait impulsivity. All items are measured on a 4-point Likert scale (*1 = never*, *2 = occasionally*, *3 = often*, *4 = always*). The scale indicated six first-order components (attention, motor, self-control, cognitive complexity, perseverance, and cognitive instability impulsiveness) and three second-order factors (attentional, motor, and non-planning impulsiveness).

Güleç and colleagues (2008) adapted the questionnaire into Turkish by retaining a similar factor structure. Cronbach's alpha reliabilities of the scale were .78 for students and .81 for patients. There are four scores obtained from the BIS-11; one of them is the total score and the others are attentional impulsivity (AI), motor impulsivity (MI), and non-planning impulsivity (NPI). For AI, possible scores are ranged from 8 to 32; for MI, possible scores are ranged from 11 to 44; and for NPI possible scores are ranged from 11 to 44 as well. The total score of the BIS-11 is ranged from 30 to 120. The higher scores in each subscale and BIS-11 indicate a higher level of impulsiveness. The items 5, 6, 9, 11, 20, 24, 26, and 28 were found to belong to the AI factor; items 2, 3, 4, 16, 17, 19, 21, 22, 23, 25, and 30 were found to belong to the MI factor; and the items 1, 7, 8, 10, 12, 13, 14, 15, 18, 27, and 29 were found to belong to the NPI factor. Also, items 1, 7, 8, 9, 10, 12, 13, 15, 20, 29, and 30 are indicated as reverse items (Güleç et al., 2008). BSI-11 can be seen in Appendix 8.

2.2.8. The Positive and Negative Affect Schedule (PANAS)

The Positive and Negative Affect Schedule (PANAS) is a self-report questionnaire that was developed by Watson and colleagues (1988). The scale is designed to measure mood or emotion, and it consists of 20 items, with 10 items assessing positive affect and 10 items assessing negative affect. Each item is rated on a five-point Likert scale, ranging from *1 = very slightly or not at all* to *5 = extremely*. It has been suggested that PANAS can be used to measure state and trait affect, also it is useful for detecting emotional reactions to events (Tran, 2013). Items represent negative affect are 2, 4, 6, 7, 8, 11, 13, 15, 18, & 20; and items represent positive affect are 1, 3, 5, 9, 10, 12, 14, 16, 17, & 19. The total score is calculated by the sum of the positive and negative items. Scores range from 10 – 50 for each affect category. For negative affect, the main score was indicated as 17.4; for positive affect, the main score was indicated as 33.3 (Watson et al., 1988).

Turkish standardization of the scale was carried out by Gençöz (2000) and indicated similar factor structures. Cronbach's alpha reliabilities for positive and negative affect were respectively .83 and .86. While higher scores on the positive subscale indicate having high energy and pleasure, being alert; lower scores on the negative scale indicates fuzziness and sadness (Gençöz, 2000; Watson et al., 1988). PANAS can be seen in Appendix 9.

2.3. Procedure

The study was approved by the Social Sciences, Humanities, and Art Field Research Committee of Başkent University (can be seen in Appendix 10). After ethical approval, the study was pre-registered to Open Science Framework (OSF) as can be seen from the attached link here (https://osf.io/7c6up/?view_only=e4c7a5793fbd4f849cb0fdee2e9845e2). The study was based on voluntary participation and the data were collected by online survey platform Qualtrics. The generated survey link was distributed on Social Media (Twitter, Facebook, Instagram, etc.). Before answering the surveys, all participants were informed about the study by the Informed Consent Form. After approving the consent, they were asked to complete the Demographic Information Form. After that, participants were instructed to respond to the survey. The survey consisted of Positive and Negative Affect Schedule (Gençöz, 2000; Watson et al., 1988) Borderline Personality Inventory (Aydemir et al. 2006; Leichsenring, 1999) Metacognition Questionnaire (Cartwright-Hatton & Wells, 1997; Tosun & Irak, 2008), Delay Discounting Task (Kirby et al., 1999), Barratt Impulsiveness Scale (Güleç et al., 2008; Patton et al., 1995), and Task-Related Metacognition Questionnaire. These scales were randomly presented to the participants, except PANAS. All participants firstly completed PANAS in order to detect the current affect to prevent the possible emotional impact of the questionnaires. Also, the administration of the TRMQ was right after the DD task. All scales took approximately 20-25 minutes to complete.

2.4. Statistical Analyses

- Descriptive analyses (minimum scores, maximum scores, means, standard deviations, and skewness and kurtosis values) were conducted to analyze descriptive features of the main measures.

- Independent t-tests were used to investigate the gender effect on BPD feature (Hypothesis 1).

- Spearman's rho (r_s) correlation analysis was used to measure the correlation between the variables of the study. Also, for testing hypotheses 2, 3, and 4 the same analysis was used.

- Two separate multiple analysis of variance (MANOVA) analyses were used. The first one was conducted in order to examine BPD feature and positive mood differences on delay-related and self-report impulsivity (Hypothesis 5).

- The second MANOVA was carried out to explore BPD feature and negative mood differences on delay-related and self-report impulsivity.

- Also, as supplementary analyses, 3 separate Mann Whitney U test was conducted. The first one was used in order to compare low and high BPD groups on task-related metacognition. The second one was carried out to compare low and high BPD feature on positive affect. Then, the last one was conducted to compare low and high BPD feature on negative affect.

3. RESULTS

Before conducting statistical analyses, the data obtained from 540 participants were examined for the inclusion-exclusion criteria, missing data, outliers, normality, and the assumptions of applied analyses. After elimination of the non-completed questionnaires, 363 participants remained. Among all subjects, 2 subjects were excluded by the reason of their age, 7 subjects were excluded by the reason of education status, 45 subjects were excluded due to having a psychiatric/neurological diagnosis, and 43 subjects were excluded due to regular use of prescription medication. Analysis of multivariate outliers was conducted, and 22 participants were excluded based on the Mahalanobis calculation. Also, 8 subjects were not included in the statistical analyses due to having low consistency in the DD task (Gray et al. 2016). In total, 236 participants were included in the study. There were no missing values in the data, because of the settings in Qualtrics which provide to force participants for answering all questions.

Following data cleaning, the data were investigated in terms of the normality with values of skewness and kurtosis, and histograms. Consequently, skewness-kurtosis values and histograms were found to be within the acceptable range for all the variables indicating distributions are normal (Tabachnick & Fidell, 2013). After that, the data were investigated in terms of the Bivariate Correlation, Analysis of Variance (ANOVA), and Multivariate Analysis of Variance (MANOVA) assumptions.

3.1. Descriptive Statistics

Means, standard deviations, minimum-maximum scores, skewness, kurtosis values were calculated for Borderline Personality Inventory (BPI), Positive and Negative Affect Schedule (PANAS) and its subscales (i. e., positive and negative), Delay Discounting Task (DD Task), and its subtypes (i. e., log overall k, log small k, log medium k, and log large k), Barratt Impulsiveness Scale-11 (BIS-11) and its subscales (i. e., attentional, motor and non-planning impulsiveness), Metacognition Questionnaire-30 (MCQ-30) and its factors (i. e., positive beliefs, cognitive confidence, uncontrollability and danger, cognitive self-consciousness, need to control to thoughts), and Task-Related Metacognition Questionnaire (TRMQ) (Table 2).

Table 2. *Descriptive Statistics of the Measures*

Measures	Mean	SD	Min	Skewness	Kurtosis	Max
BPI	13.00	7.22	0	.63	.26	38
PANAS						
NA	28.60	6.70	12	.00	-.46	44
PA	19.54	6.21	11	.74	.23	40
DD Task						
LOK	-1.47	.61	-3.40	-.42	-.20	-.60
LSK	-1.30	.56	-3.20	-.75	.13	-.61
LMK	-1.47	.58	-3.20	-.52	-.24	-.60
LLK	-1.70	.69	-3.60	-.15	-.60	-.60
BIS-11	61.30	9.01	42	.25	-.24	91
AI	16.60	3.35	9	.18	-.10	26
MI	21.06	3.37	14	.34	-.21	32
NPI	24.10	4.12	15	.28	.20	38
MCQ-30	71.90	12.72	31	-.26	.12	111
PB	11.40	3.55	5	-.12	-.81	19
CC	12.60	4.92	6	.57	-.67	24
UD	17.80	4.83	7	-.07	-.70	28
CSC	14.32	2.81	5	-.31	-.27	20
NCT	13.80	3.73	6	-.16	-.31	24
TRMQ	3.01	0.98	1	.06	-.60	5

3.2. Correlations Among Variables

The correlations between study variables and demographic variables, which is age, were calculated with correlation analyses (Table 3). Main variables were BPD feature, positive and negative affect, delay-related impulsivity and its sub-measures which are small k, medium k, and large k, self-report impulsivity and its subscales which are motor impulsivity, attentional impulsivity, and non-planning impulsivity, dysfunctional metacognitive beliefs, and its subscales which are positive beliefs, cognitive confidence, uncontrollability and danger, cognitive self-consciousness, need to control thoughts, and finally task-related metacognition.

To investigate the size and direction of the relationship among variables, a bivariate Pearson's product-moment correlation coefficient (r) was planned to calculate. Before r calculation, the assumptions of normality, linearity, and homoscedasticity were examined. The linearity assumption was found to be violated for the TRMQ. Therefore, as recommended Spearman's rho (r_s) was used (Allen et al., 2014).

Results of the analysis showed that there was a significant and negative correlation between age and BPI (r_s =-.25, $p < .001$) indicating as age increased BPD feature decreased. Also, age was found to have a significant and negative correlation with BIS-11 (r_s =-.13, $p < .05$), and its' two subscales [AI (r_s =-.21, $p < .001$); NPI (r_s =-.13, $p < .05$)] demonstrating as age increased self-report impulsivity and its' two subscales scores decreased.

BPI was found to have a significant and positive correlation with NA (r_s =.27, $p < .001$) indicating participants with higher BPD feature were also reported higher negative affect. Also, a significant and positive correlation was found between BPI and BIS-11 (r_s =.44, $p < .001$) and its' all subscales [AI (r_s =.53, $p < .001$); MI (r_s =.33, $p < .001$); NPI (r_s =.24, $p < .001$)] demonstrating as BPD feature increased self-report impulsivity and its' all-subscales scores increased. Additionally, results showed that there were a significant and positive correlations between BPI and MCQ-30 (r_s =.48, $p < .001$) and its' four subscales [CC (r_s =.29, $p < .001$); UD (r_s =.42, $p < .001$); CSC (r_s =.26, $p < .001$); NCT (r_s =.26, $p < .001$)] indicating as BPD feature increased dysfunctional metacognitive beliefs and its' all-subscales scores increased.

Overall k value in the DD task and its sub-measures were all positively and significantly correlated with each other (r_ss ranged between .83 and .96). Also, a significant and positive correlation was found between the overall k value in the DD task and BIS-11 (r_s = .14, $p < .05$) demonstrating participants with higher delay discounting were also reported higher self-report impulsivity. Finally, the overall k value in DD task was found to have a significant and negative correlation with TRMQ (r_s = -.27, $p < .001$) indicating participants with higher delay-related impulsivity were also reported their choices as less profitable.

BIS-11 and its subscales were all positively and significantly correlated with each other (r_ss ranged between .72 and .80). Also, results indicated that there was a significant and positive relationship between BIS-11 and MCQ-30 (r_s = .19, $p < .001$) indicating increased self-report impulsivity associated with increased dysfunctional metacognitive beliefs. Lastly, BIS-11 was found to have a significant and negative correlation with TRMQ (r_s = . -18, $p < .001$) demonstrating participants with higher self-report impulsivity scores were also reported their choices as less profitable.

MCQ-30 and its' subscales were all positively and significantly correlated with each other (r_ss ranged between .50 and .70). However, there was not any significant correlation between MCQ-30 and TRMQ indicating dysfunctional metacognitive beliefs and task-related metacognition have not been associated with each other.

Table 3. *Correlations among Variables*

Variables	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.	19.
1. Age	-																		
2. BPI	-.25**	-																	
3. PA	.18**	-.04	-																
4. NA	-.05	.27**	-.01	-															
5. LOK	-.03	.03	.06	.10	-														
6. LSK	-.03	-.01	.06	.03	.93**	-													
7. LMK	-.05	.04	.08	.13*	.95**	.85**	-												
8. LLK	.02	.04	.09	.14*	.94**	.83**	.89**	-											
9. BIS-11	-.13*	.44**	-.16*	.12	.14*	.10	.15*	.18**	-										
10. AI	-.21**	.53**	-.10	.16*	.12	.08	.10	.16*	.80**	-									
11. MI	.04	.33**	.04	.19**	.05	.00	.05	.09	.72**	.50**	-								
12. NPI	-.13*	.24**	-.29**	.03	.10	.08	.10	.12	.80**	.45**	.37**	-							
13. MCQ-30	.02	.48**	-.08	.30**	-.02	-.03	-.01	-.01	.19**	.30**	.10	.11	-						
14. PB	-.06	.12	-.02	.05	-.11	-.10	-.09	-.13	-.03	.02	-.06	.00	.52**	-					
15. CC	.15*	.29**	-.13*	.09	-.04	-.04	-.04	-.01	.34**	.34**	.20**	.28**	.57**	.13*	-				
16. UD	-.09	.42**	-.21**	.36**	.02	-.03	.05	.04	.15*	.29**	.02	.10	.70**	.12	.22**	-			
17. CSC	.05	.26**	.21**	-.02	-.03	-.02	-.04	-.05	-.12	.03	-.04	-.26**	.50**	.21**	.07	.28**	-		

32

(Continued) *Correlations among Variables*

18. NCT	-.03	.35**	.02	.30**	.00	-.03	-.01	.03	.14*	.17**	.12	.11	.68**	.30**	.15*	.46**	.29**	-
19. TRMQ	.10	-.06	.14*	-.03	-.23**	-.21**	-.23**	-.23**	-.18**	-.14	.00	-.19**	-.08	-.02	-.06	-.11	.03	-.03	-

*Note. BPI = Borderline Personality Inventory, PANAS = Positive and Negative Affect Schedule, NA = Negative Affect, PA =Positive Affect, DD Task = Delay Discounting Task , LOK = Log Overall k, LSK = Log Small k, LMK = Log Medium k, LLK = Log Large k, BIS-11 = Barratt Impulsiveness Scale-11, AI = Attentional Impulsiveness, MI = Motor Impulsiveness, NPI = Non Planning Impulsiveness, MCQ-30 = Metacognition Questionnaire-30, PB = Positive Beliefs, CC = Cognitive Confidence, UD = Uncontrollability and Danger CSC = Cognitive Self Consciousness, NCT = Need to Control Thoughts, TRMQ = Task-Related Metacognition, *p < .05, **p<.001*

3.3. T-test for Effect of Gender on BPD Feature

An independent-samples t-test was carried out to compare the average BPI scores reported by female participants to the average BPI scores reported by male participants. Before conducting the analysis, the data were checked in terms of the test assumptions. It was found that the Shapiro-Wilk statistic was not significant, showing the assumption of normality was not violated. Levene's test was also non-significant indicating equal variances may be assumed. Results of the t-test showed that group difference on BPI score was not statistically significant, t (234) = 0.18, p = .78 (Table 4).

Table 3. *T-test Results Comparing Gender on BPD Feature*

| | Gender | | | | | | 95% CI for Mean Difference | | |
| | Male | | | Female | | | | | |
	M	SD	N	M	SD	n		t	df
BPD Feature	12.90	7.55	101	13.07	7.00	135	-1.70, 2.05	0.18	234

Note. BPD Feature = Borderline Personality Disorder Feature

3.4. Test of the BPD Feature and Positive Affect, and Their Interaction

To investigate effect of BPD feature, positive affect, and their interaction on the measures of impulsivity, variables were categorized into two groups. As mentioned before, the cut-off point of the BPD scale is 15 (Aydemir et al. 2006). The BPD feature of the first group varied between 0 to 15, and it was named as low BPD Feature group; and scores through 16 to highest assigned to second group, which was named as high BPD Feature group. Similar to Chapman and colleagues' (2008) study, the median split was used to categorize the positive affect scores of the participants. The positive affect of the first group varied between 0 to 29, and it was named as low positive affect group. Positive affect scores through 30 to highest constructed the second group, which was named as high positive affect group. As a result, 4 independent groups were constructed (low BPD feature-low positive affect, n= 75; low BPD feature-high positive affect, n= 72; high BPD feature-low positive affect, n= 50; high BPD feature-high positive affect, n= 39).

A 2 x 2 between-subjects MANOVA was performed to investigate differences of BPD feature, positive affect, and their interaction on impulsivity. The BPD feature with two

levels (low and high) based on BPI scores and positive affect with two levels (low and high) based on PANAS scores were independent variables. The two impulsivity scores (overall k value in DD task and BIS-11) were dependent variables (n = 236).

Before conducting the MANOVA the data were examined in terms of required assumptions. Univariate normality was investigated with Shapiro-Wilk tests and boxplots. Also, no multivariate outliers were found in the data, showing the assumption of multivariate normality was not violated. Correlations between the dependent variables were not high, indicating multicollinearity was not of concern. Also, the relationships that did exist between the dependent variables were approximately linear. Finally, Box's M was nonsignificant at $\alpha = .001$, indicating that assumption of the homogeneity of variance-covariance matrices was supported.

Due to necessary assumptions were met by the data, a 2 x 2 between subject MANOVA was conducted. Results indicated significant main effect of BPD feature (F [2, 231] = 20.296, $p = .000$; *Wilk's Λ = .851, partial η2 = .15*), and significant main effect of positive affect (F [2, 231] = 5.266, $p = .006$; *Wilk's Λ = .956, partial η2 = .04*) on impulsivity (both DD task and BIS-11), and significant interaction effect of the BPD feature and positive affect (F [2, 231] = 2.115, $p = .049$; *Wilk's Λ = .974, partial η2 = .03*) indicating individuals' impulsivity was differentiated with regard to their BPD feature, positive affect levels and their interaction.

The alpha value was modified according to Bonferroni correction, and univariate analyses were conducted at Bonferroni adjusted level of .025 (.05/2) to inspect the effect of BPD feature, positive affect, and BPD feature x positive affect on DD task and BIS-11. Results revealed that the main effect for BPD feature was significant on BIS-11 (F [1, 232] = 39.239, $p = .000$; partial *η2* = .14). Individuals who have a high BPD feature have higher self-report impulsivity scores ($M = 65.61$, *S.D.* = 8.94) than individuals with a low BPD feature ($M = 58.63$, *S.D.* = 8.0). ANOVAs also demonstrated that the main effect for positive affect was significant on BIS-11 (F [1, 232] = 7.182, $p = .01$; *partial η2 = .03*). Individuals with low positive affect were found to have higher self-report impulsivity ($M = 62.99$, *S.D.* = 9.02) than individuals who are in high positive affect state ($M = 59.32$, *S.D.* = 8.62). Additionally, the interaction of the BPD feature and positive affect was significant on DD task (F [1, 232] = 5.191, $p = .024$; *partial η2 = .02*). Follow-up analyses showed that individuals with high BPD feature and high positive affect made more impulsive choices (M

= -1.33, *S.D.* = .56) than individuals with high BPD feature and low positive affect (*M* =-1.63, *S.D.* = .64) (Table 5, 6, and 7).

Table 4. *MANOVA for BPD Feature and Positive Affect*

Variables	Wilk's Λ	Multi. F	Multi. Df	Multi. sig.	Multi. η_p^2	Uni. F	Uni. df	Uni. sig.	Uni. η_p^2
BPD Feature	.851	20.30	2,231	.00***	.11				
DD Task						.60	1, 232	.81	.00
BIS-11						39.24	1, 232	.00***	.14
Positive Affect	.956	5.27	2,231	.01*	.05				
DD Task						1.96	1, 232	.16	.02
BIS-11						7.18	1, 232	.01**	.03
BPD Feature x Positive Affect	.974	3.05	2,231	.05*	.03				
DD Task						5.19	1, 232	.02**	.02
BIS-11						1.73	1, 232	.19	.00

*Note. DD Task = Delay Discounting Task, BPD Feature = Borderline Personality Disorder Feature, BIS-11 = Barratt Impulsiveness Scale-11, η_p^2 = Partial Eta Squared, *p < .05, **p < .025, ***p <. 001.*

Table 5. *Group Comparisons for Overall k Value*

BPD Feature		Low		High		Total	
Positive Affect		M	SD	M	SD	M	SD
	Low	-1.43	.58	-1.63	.64	-1.50	.61

| | High | -1.50 | .62 | -1.33 | .62 | -1.44 | .61 |
| | Total | -1.46 | .60 | -1.49 | .62 | -1.47 | .61 |

Note. BPD Feature = Borderline Personality Feature

Table 6. *Group Comparisons for BIS-11*

BPD Feature		Low		High		Total	
Positive Affect		M	SD	M	SD	M	SD
	Low	60.80	8.11	66.28	9.40	63.00	9.02
	High	56.37	7.27	64.77	8.35	59.33	8.62
	Total	58.63	8.00	65.61	8.94	61.26	9.01

Note. BPD Feature = Borderline Personality Feature

3.5. Test of the BPD Feature and Negative Affect, and Their Interaction

To investigate differences of BPD feature, negative affect, and their interaction on the measures of impulsivity, variables were categorized into two groups. The BPD feature of the first group varied between 0 to 15 (low BPD Feature group); and scores through 16 to highest assigned to the second group (high BPD Feature group). Similar to Chapman and colleagues' (2008) study, the median split was used to categorize the negative affect scores of the participants. The negative affect of the first group varied between 0 to 19 (low negative affect group). Negative affect scores through 20 to highest constructed the second group (high negative affect group). Consequently, 4 independent groups were constructed (low BPD feature-low negative affect, n= 87; low BPD feature-high negative affect, n= 60; high BPD feature-low negative affect, n= 38; high BPD feature-high negative affect, n= 51).

A 2 x 2 between-subjects MANOVA was performed to investigate differences of BPD feature, negative affect, and their interaction on impulsivity. The BPD feature with two levels (low and high) based on BPI scores and negative affect with two levels (low and high) based on PANAS scores were independent variables. The two impulsivity scores (overall k value in DD task and BIS-11) were dependent variables (n = 236).

Before conducting the MANOVA, the assumptions of the analysis were checked. Univariate normality was investigated with Shapiro-Wilk tests and boxplots. Also, it was

detected that there were no multivariate outliers in the data. Correlations between the dependent variables were not extreme indicating that multicollinearity was not a problem. Besides, the relationships between the dependent variables were approximately linear. Finally, Box's M was nonsignificant at $\alpha = .001$, indicating assumption of the homogeneity of variance-covariance matrices was supported.

After assumption check, a 2 x 2 between subject MANOVA was conducted. Findings showed that significant main effect of BPD feature (F [2, 231] = 20.33, p = .000; *Wilk's Λ = .850, partial $\eta2$ = .15*) on impulsivity (both DD task and BIS-11). However, the main effect of negative affect on impulsivity (both DD task and BIS-11) (F [2, 231] = 1.660, p = .192; *Wilk's Λ = .986, partial $\eta2$ = .01*) and interaction of the BPD feature and negative affect was not significant (F [2, 231] = 0.18, p = .982; *Wilk's Λ = 1.00, partial $\eta2$ = .00*). Findings indicated that individuals' impulsivity was differentiated regarding their BPD feature, but not with relation to negative affect levels and their interaction.

The alpha value was modified according to Bonferroni correction, and univariate analyses were conducted at Bonferroni adjusted level of .025 (.05/2) in order to inspect the effect of BPD feature, negative affect, and BPD Feature x negative affect on DD task and BIS-11. Tests of between-subject effects showed that the main effect for BPD feature was significant on BIS-11 (F [1, 232] = 37.832, p = .000; *partial $\eta2$ = .14*). Individuals who have a high BPD feature (M = 65.62, *S.D.* = 8.94) have higher self-report impulsivity scores in BIS-11 than individuals with a low BPD feature (M = 58.63, *S.D.* = 8.00). (Table 8, 9, and Table 10).

Table 7. *MANOVA for BPD Feature and Negative Affect*

Variables	Wilk's Λ	Multi. F	Multi. df	Multi. sig.	Multi. η_p^2	Uni. F	Uni. df	Uni. sig.	Uni. η_p^2
BPD Feature	.850	20.33	2,231	.00	.15				
DD Task						.57	1, 232	.45	.00
BIS-11						37.83	1, 232	.00***	.14

Negative Affect	.986	1.66	2,231	.19	.01				
DD Task						3.02		.08	.01
BIS-11						.08		.78	.00
BPD Feature x Negative Affect	1.00	.02	2,231	.98	.00				
DD Task						.00***	1, 232	.98	.00
BIS-11						.03	1, 232	.85	.00

Note. DD Task = Delay Discounting Task, BPD Feature = Borderline Personality Disorder Feature, BIS-11 = Barratt Impulsiveness Scale-11, η_p^2 = Partial Eta Squared, *p < .05, **p < .025, ***p <. 001

Table 8. *Group Comparisons for Overall k Value*

BPD Feature		Low		High		Total	
Negative Affect		M	SD	M	SD	M	SD
	Low	-1.52	.59	-1.58	.63	-1.54	.60
	High	-1.38	.61	-1.44	.61	-1.40	.61
	Total	-1.46	.60	-1.49	.62	-1.47	.61

Note. BPD Feature = Borderline Personality Feature

Table 9. *Group Comparisons for BIS-11*

BPD Feature		Low		High		Total	
Negative Affect		M	SD	M	SD	M	SD
	Low	58.68	8.42	65.92	8.54	60.88	9.06
	High	58.56	7.41	65.39	9.31	61.70	8.98

Total	58.63	8.00	65.61	8.94	61.26	9.01

Note. *BPD Feature = Borderline Personality Feature*

4. DISCUSSION

In this part, the results of the current study are evaluated, and their interpretations are discussed in light of the relevant literature. The sequence of the discussion is arranged according to each result's order in the Results section. Afterward, the clinical implications, strengths, and limitations of the current study and recommendations for further research are discussed.

4.1. Associations among Variables

In order to explore relationships between study variables, Spearman's rho (r_s) correlation analysis was conducted. Results showed that age and BPD feature has a significant and negative correlation indicating an increase in age is associated with decreased BPD feature. This finding is consistent with the findings in many previous studies. For example, a follow-up study conducted with BPD patients stated that symptoms of the BPD might change over time and this change is in a decreasing direction (Paris et al., 1987). The most outstanding findings of the study were decreasing direction of the change was observable not only in impulsivity and affective symptoms, but also less chaotic relationships were observed. Also, similar findings were reported in 10 years of follow-up adolescent twin study which stated that BPD traits tend to decrease by adulthood (Bornovalova et al., 2009). A more recent review study that indicated research from the last twenty years demonstrated that BPD has a positive direction throughout the time including decrement in symptoms (Biskin, 2015). Bornovalova and colleagues (2009) discussed several possible explanations for the age-related decrement in BPD. Authors indicated the notion of "once a personality disorder, always a personality disorder" is a myth and they highlighted the importance of the critical risk period which means the window or a time when symptoms are at their highest level. Also, they stated that this critical period for BPD is approximately aged between 14 to 17. Interventions at these ages are essential in terms of the decreasing direction of the symptoms over time. Besides, they emphasized the role of environmental factors that are as important as the effect of genetics on symptom reduction over time.

Additionally, in the current study, age-related decrement in BPD features might be associated with the assessment tool used to measure the BPD feature in the Turkish sample. Some items in the inventory such as questions related to drug and alcohol use may be perceived as more acceptable across the current generation. In other words, increased BPD

feature scores for younger adults can be related to the characteristics of the generation. A recent study conducted by Choudhary and Gupta (2020) emphasized how cultural differences affect the manifestation of BPD and we suggest that changes that emerge over time across the generations might be one of the associated factors. This assumption should be further investigated. Also, it might be beneficial to investigate BPD features and age differences by two or more assessment tools at the same time.

Moreover, it was found that there was a significant and negative correlation between age and self-report impulsivity score indicates that an increase in age is associated with decreased impulsivity. The decrement of the impulsivity level throughout adulthood was reported by several research findings (Paris & Zweig-Frank, 2001; Stevenson et al., 2003; Videler et al., 2019; Zanarini et al., 2012). As a possible explanation of the age-related decrement in trait impulsivity, Reynolds and colleagues (2013) stated that impulsivity control is formed over the course of early adulthood and adolescence and it is apparent from the functional maturation of the brain. They stated that the growth of the prefrontal cortex plays a significant role in the maturation of higher cognitive skills, which are mechanisms inherently connected to impulse control. Also, several studies demonstrated that alteration of cortical structure with age is associated with refinement in anterior insula function and which contributes to a linear decrease of trait impulsivity (Churchwell & Yurgelun-Todd, 2013; Steinberg et al., 2008).

However, a significant correlation between age and delay-related impulsivity could not found. In other words, according to the findings of the current study, there were no associations between age and delay-related impulsivity. Although a considerable amount of literature has been published on age-related differences in delay-related impulsivity, conflicting results have been reported. For instance, rapid decrement in delay-related impulsivity towards adulthood was reported by Green and colleagues (1996). They suggested that reward-based decision-making related impulsivity declines in young adulthood, and it becomes stable in the 30s. Similarly, in Halfmann and colleagues' study (2013) increasing age was found to be associated with reduced discounting. Opposite to these results, it was reported that discounting rates were found to be increasing over time (Read & Read, 2004). On the other hand, several studies indicated that there was no relationship between age and delay-related impulsivity (Chao et al., 2007; Samanez-Larkin et al., 2011) as supported by the current study. Samanez-Larkin and colleagues (2011) indicated that conflicting results in the literature might be originated from interactions

among individual difference variables and various DD task procedures such as different presentation of the rewards to the participants. They highlighted that to obtain clearer conclusions in terms of understanding the variety of DD procedures future studies are needed. Overall, as outlined above, the findings of the current study and relevant literature supported that increased age is associated with decreased impulsivity measured by BIS-11. However, regarding age and delay-related impulsivity further investigation is needed.

According to results in the current study, the BPD feature was found to have a significant and positive correlation with self-report impulsivity score (BIS-11) and its' subscales indicating that a higher BPD feature is associated with higher impulsivity, which is not only a well-established finding and frequently reported in the literature (Fields et al., 2015; Linhartová et al., 2019; Moeller et al., 2001) but also a diagnostic criterion for BPD in the DSM-V (American Psychiatric Association, 2013). Also, findings of the study showed that there were significant and positive correlations between BPD feature and dysfunctional metacognitive beliefs and its' four subscales that states increase in BPD feature score is associated with dysfunctional metacognitive beliefs as consistent with the literature (Jelinek et al., 2016; Walton 2010; Winter et al., 2019).

Results of the current study demonstrated that there was a significant and positive correlation between MCQ-30 and self-report impulsivity score. This finding has been supported by existing literature (Ermis & Icellioglu, 2017). In other words, increased dysfunctional metacognitive beliefs are associated with increased self-report impulsivity.

Also, delay-related impulsivity was found to have a significant and positive correlation with self-report impulsivity in the current study showing that increased discounting rates are associated with increased trait impulsivity. Thus, hypothesis 2 was confirmed. Previous studies evaluating the relationship between impulsivity in DD task and self-report impulsivity observed inconsistent results on whether they are correlated or not. As argued by Mobini and colleagues (2007) some studies have reported that there was a significant and positive relationship between DD rates and self-report impulsivity which are consistent with findings of the current study (Cherek et al., 1997; de Wit et al., 2007; Kirby et al., 1999; Swann et al., 2002). However, some studies have failed to demonstrate such a relationship (e.g., Lane et al., 2003; Mitchell, 1999; Reynolds et al., 2006). This contradiction across studies might be related to different DD task procedures or different sample populations (Mobini et al., 2007). Consequently, it can be inferred that these two

different aspects of impulsivity are associated with the current sample characteristics and DD task procedures that were used in the study.

Besides, impulsivity in the DD task was found to have a significant and negative correlation with task-related metacognition reflecting that while individuals who rate their decisions as more profitable tend to show less impulsiveness in the DD task; decisions rated as less profitable are associated with being more impulsive. Consequently, contrary to hypothesis 3, the correlation between these two variables had a negative direction. This finding indicates that when asking people to monitor their actions, they can evaluate the consequences of their choices correctly. To the best of our knowledge, there is no study that investigates the relationship between delay-related impulsivity and task-related metacognition. Therefore, we can interpret this finding in light of similar research. Contrary to the finding of the current study, Brevers and colleagues' research (2013) reported that participants' metacognitive judgments about their Iowa Gambling Task performance were incorrect (Brevers et al., 2013). However, it should be noted that Iowa Gambling Task is a behavioral measure to assess impulsivity in terms of risk-taking decision-making (Upton et al., 2011), not for delay-related impulsivity, and these are evaluated as separate aspects of impulsivity. The contradiction between studies might be related to the difference in impulsivity aspects investigated. In short, the findings of the current study indicated that delay-related impulsivity is not associated with deficits in monitoring action activity.

Furthermore, the findings of the current study showed that task-related metacognition was found to have a significant and negative correlation with not only impulsivity in DD task but also with self-report impulsivity assessed by BIS-11. This finding indicates that higher scores on trait impulsivity are associated with lower scores in task-related metacognition which implies choices rated ass less profitable in DD task are also related to higher self-report impulsivity scores. When considering a positive relationship between delay-related and self-report impulsivity, this finding seems coherent. Overall, results of the study indicate that choices rated ass less profitable in DD task associated with not only higher delay-related impulsivity but also with self-report impulsivity. Although there are a small number of studies that examine the monitoring action component of the metacognition with self-report impulsivity, these results are in contradiction with the findings of the current study. For example, a recent study conducted by Angioletti and colleagues (2020) was carried out with individuals who have Parkinson's Disease with and without gambling problems. They administered the Iowa Gambling Task, self-report

impulsivity questionnaire (BIS-11), and task-related metacognition questionnaire which was developed by the researcher aims to make participants assess their own performance. Their results showed that individuals who have Parkinson's Disease with gambling problems had worse performance on the Iowa Gambling Task even though they reported they use an efficacious strategy on the task-related metacognition questionnaire. Also, self-report impulsivity was not found to be correlated with task-related metacognition questionnaire in the study. These results appear to conflict with the findings of the current study. Overall, the findings of the current study imply that people are aware of their impulsiveness when asking them to monitor their actions. Therefore, it seems helpful to focuses on incentives for impulsive actions for future research. Also, examining monitoring action activity for different impulsive behaviors might be beneficial.

On the other hand, no significant correlation between MCQ-30 and task-related metacognition was found which reflects there was no relationship between dysfunctional metacognitive beliefs and monitoring action activity component of metacognition assessed by one item questionnaire (TRMQ). Thus, hypothesis 4 was not confirmed. This finding suggests that an increase in dysfunctional metacognitive beliefs has no association with the monitoring action activity dimension of the metacognition. To the best of our knowledge, the current study is the first in terms of measuring these two metacognition related variables. Thus, these findings may be interpreted as MCQ-30 is an assessment tool that contributes to understanding maladaptive and prolonged patterns of thinking enabled and motivated by metacognitive values driving them (Cook et al., 2014), and it does not provide a clue about how well people can monitor their actions or decisions.

4.2. Effect of Gender on BPD Feature

To explore the effect of gender on the BPD feature (Hypothesis 1), an independent-samples t-test was conducted. The results indicated that gender difference in BPD feature was not statistically significant supporting the results of some studies (Grant et al., 2008; Sansone & Sansone, 2011). These studies highlighted that there was no gender difference in BPD. Yet, gender differences in terms of symptoms, comorbid disorders, treatment utilities should be carefully considered (Johnson et al., 2003; Sansone & Sansone, 2011). On the other hand, some studies reported a higher prevalence for women (Widiger & Trull, 1993) Another study reported contradicting results pointing to a higher prevalence rate for men (Coid et al., 2006). the most likely reason underlying this inconsistency is the differences in

the assessment perspectives (self vs. informant report). For example, while informant-report indicated no gender differences, men reported higher BPD severity in the self-report (Busch et al., 2016).

The finding of the study might be understandable in light of the gender roles perspective. It has been known that BPD is diagnosed predominantly in women (American Psychiatric Association, 2000). Braamhorst and colleagues (2015) suggested that there has been a gender bias regarding the diagnosis process of the BPD highlighting the importance of gender stereotypes. For example, intense anger symptoms which is one of the features of BPD are evaluated as more abnormal for a woman than for a man (Sprock et al., 1900). Considering the time that has passed since the 1990s, societies might become more aware of the biases attributed to gender. Therefore, anger-like symptoms manifested by females can be less evaluated as a deviant behavior in the diagnosis process to compare past years.

Furthermore, some core characteristics of the disorder such as fear of abandonment or unstable interpersonal relationships might be more acceptable for men to compare past years especially since the ongoing change of gender roles in developing countries like Turkey. Thus, no gender difference in BPD symptoms in the current study might be understandable considering the gender roles are beginning to break.

4.3. Effects of BPD Feature and Affect on Impulsivity

To test Hypothesis 5 and to investigate the effects of BPD feature (high-low), and positive affect (low-high) in two different dimensions of impulsivity (self-report and delay-related), 2 x 2 between-subject Multivariate Analyses of Variance (MANOVA) was conducted. Results of the study showed that individuals who have a high BPD feature also have higher self-report impulsivity scores than individuals with a low BPD feature and supporting the hypothesis 5a was confirmed. These findings are in alignment with the literature by emphasizing trait impulsivity is a core component of BPD (Berlin et al., 2005; Hollander & Rosen; 2000; Links et al., 1999).

However, a significant difference regarding the BPD feature on the DD task was not found and hypothesis 5b could not be confirmed. Previous studies have reported that BPD is associated with higher delay-related impulsivity measured by the DD task (Berenson et al., 2016; Krause-Utz et al., 2016; Lawrence et al., 2010). On the other hand, several studies have indicated that delay-related impulsivity is not impaired and has not a central role in

BPD (D' Agostino 2010; Dom et al., 2006; Maráz, et al., 2012). For instance, Dom and colleagues (2006) stated that delay-related impulsivity which is measured by the DD task represents the aspect of the reward sensitivity of impulsivity and it is relatively unimpaired in Cluster B disorders including BPD. In a study conducted by D' Agostino (2010) DD task was not found to be associated with the BPD feature even though the investigation was carried out with two different DD task procedures. In the study, it was suggested that there is no reward-delay type of impulsivity in BPD highlighting DD task might not assess impulsivity for the BPD population. As stated by this study, using losses instead of gains in DD tasks such as asking participants "losing 50 TL now or losing 150 TL in a week" may be interesting in the examination of delay-related impulsivity in BPD. Overall, the findings of the study indicated that while trait impulsivity was found as a core component of the BPD, delay-related impulsivity seems unimpaired.

Another possible explanation of the difference between self-reported outcome and the behavioral outcome might be related to the nature of the BPD. It has been known that individuals with BPD frequently use split defense mechanisms (Kernberg, 1975; Zanarini et al., 2009) which reflects a tendency for thinking "all or nothing" and having extreme evaluations about others and themselves. From this point of view, this tendency of the individuals with BPD might have an influence on them to evaluate their impulsivity more extreme in self-report assessments. On the other hand, in situations where they might encounter in daily life such as choosing between a smaller immediate reward and a larger delayed reward, their impulsivity might not extremely manifest itself as in self-report assessments due to a lack of salient information concerning their judgments about themselves. Future research should further investigate the comparison of these two impulsivity aspects by using different procedures and populations. Consequently, it is important to bear in mind the possible bias in these self-report studies in terms of external validity issues.

According to the findings of the current study, individuals with low positive affect were found to have higher self-report impulsivity than individuals who are in a high positive affect state, supporting hypothesis 5c was confirmed. Similarly, a recent study reported that participants who have higher self-report impulsivity scores also reported lower levels of positive affect (Herman et al., 2018). The finding regarding individuals who are in low positive affect reporting themselves more impulsive also seems to be consistent with the frame of the "Emotion as Information" hypothesis which emphasizes increased positive

affect is associated with positive evaluation in decision making (Clore & Huntsinger, 2007). Although self-report impulsivity measures trait impulsivity and it does not include the decision-making process, the findings of the current study suggest that it might be influenced by the current affective state. Also, it should be noted that this influence might be due to the nature of the self-report assessment and future research should address this issue.

The current study found no significant effect of positive affect on delay-related impulsivity was not found and hypothesis 5d could not be confirmed. The study conducted by Hirsh and colleagues (2010) highlighted the impact of personality feature in the relationship between positive affect and delay-related impulsivity. They found that while the main effect of positive mood on the DD task was not significant; when it interacted with a personality feature (extraversion), their interaction effect was found to be significant. In other words, extroverted individuals were found to be more impulsive in the DD task when they had positive affect induction. They also stated that their study investigated only general positive affect, and it might be possible that by looking at specific positive emotions, a stronger distinction might have been found. On the other hand, Liu and colleagues (2013) stated that positive affect is directly associated with choosing delayed rewards. These contradicting results can be due to the different designs of the studies. For example, for increasing positive emotional state, Liu and colleagues (2013) used imagined positive future episodes, whereas Hirsh and colleagues (2010) used a positive affect induction procedure based on success-failure situations, and the current study did not make any affect induction. As a result, the presence or absence of affect induction or different procedures for affect induction might influence the relationship between affect and delay-related impulsivity.

Also, the findings of the study demonstrated that individuals with high BPD feature and high positive affect made more impulsive choices than individuals with high BPD feature and low positive affect. Thus, the hypothesis 5e was not confirmed. This result can be interpreted as although delay-related impulsivity has not been considered as a core dimension of BPD impulsivity the situation may change when emotions are involved in the equation. In other words, the high BPD feature does not seem to be directly associated with delay-related impulsivity. However, heightened positive affect appears to contribute to making more impulsive choices for individuals with high BPD feature. As far as our knowledge, there are no studies directly investigating the effect of positive affect on delay-related impulsivity in the BPD sample. Relevant literature has emphasized the role of emotion regulation in the frame of Biosocial Theory (Crowell et al., 2009; Linehan, 1993)

by pointing out BPD impulsivity is related to handling emerged negative affect (Brown et al., 2002; Crowell et al., 2009; Vollrath et al., 1996). On the other hand, Beblo and colleagues (2013) demonstrated that increased suppression of positive emotions as important in BPD as negative emotions. They suggested that interventions of Dialectical Behavioral Therapy proposed by Linehan (1993) which focus on coping with negative emotions should change in terms of handling positive emotions. It also should be taken into consideration in treatment modalities. From this point of view, results of the current study confirmed that positive affect may play a critical role in BPD showing the effect of positive affect regarding delay-related impulsivity.

To explore the effects of BPD feature (high-low), and negative affect (low-high) in two different dimensions of impulsivity (self-report and delay-related), 2 x 2 between-subject Multivariate Analyses of Variance (MANOVA) was conducted. Surprisingly, no differences were found between low and high negative affect groups in terms of impulsivity (both self-report and delay-related). This finding is contradicting with previous studies which have suggested that negative affect is associated with increased delay-related impulsivity (Guan et al., 2015; Malesza, 2019) and self-report impulsivity (Herman et al., 2018). This contradiction may be due to sample characteristics of the current study, such that, low and high negative groups were created by using the median split based on the participants' PANAS scores. While the median for the positive group was 29.0; the median for the negative group was 19.0 indicating the high negative affect might not be high enough to detect a difference.

Additionally, we could not find any impulsivity difference for individuals with high BPD feature and in the high negative affect group. As outlined above, relevant literature has pointed out the importance of a negative emotional state on BPD impulsivity (Tomko et al., 2015) emphasizing BPD impulsivity is related to handling emerged negative affect (Brown et al., 2002; Crowell et al., 2009; Vollrath et al., 1996). One of the possible explanations for this contradiction can be related to sample characteristics of the current study as mentioned before. Additionally, this contradiction could be originated from methodological issues regarding PANAS. Undifferentiated emotions are obtained as a whole negative affect and none of these emotion types are not directly related to emotions that BPD is sensitive to (e.g., fear of abandonment, loneliness, or chronic emptiness; Miller et al., 2020). Therefore, negative affect related to impulsivity could not found.

49

4.4. Clinical Implications of the Current Study

First, in light of the findings of the study and relevant literature, the importance of age-related interventions is outstanding. Although BPD has been evaluated as difficult to treat for many years, findings of the more recent studies suggest that prevention of the disorder or some core symptoms might be possible by efficacious intervention programs in the ages of adolescence. Therefore, we suggest that revisiting diagnostic criteria regarding the onset of the BPD should be more focused on signs that emerged during adolescence, and increasing adolescent focused intervention programs might be beneficial in terms of the prognosis of the disorder.

Also, the study contributed to current literature regarding contradicting findings of the gender effect of the BPD. Similar to more recent findings, a gender difference in the BPD feature was not found. Decreasing the stigmatization effect for women might be beneficial not only in female patients for gaining a new point of view on the disorder but also for men in terms of increasing the treatment-seeking behavior. Consequently, it seems vital to provide educational services in clinical initiatives about gender stigmatization for the condition.

As pointed out, BPD is characterized by excessive impulsiveness. The current study showed that different dimensions of impulsivity might not be identified as a core component in the BPD impulsivity. Therefore, evaluating impulsivity as a construct that has multi-dimensional nature especially in the assessment and evaluation practices of the BPD patients seems crucial. By doing so, it may be possible to explore each impulsive behavior defined by DSM-V according to different impulsivity dimensions and developing specialized and more effective intervention programs. Moreover, evaluating impulsivity as a multi-dimensional construct in clinical assessments and intervention programs might not be not only beneficial in terms of BPD but also it might make contributions to the different disorders which include impulsivity as a core symptom.

Furthermore, Beblo and colleagues' suggestion (2013) regarding positive affect, and the results of this current study, which is also consistent with their suggestion, should be taken into consideration in clinical interventions for BPD patients. We suggest that this issue is especially important in terms of impulsive behaviors of BPD patients. For example, although being in a positive emotional state seems to be desirable for patients under treatment, it should be noted that it might contribute to possible impulsive actions BPD

patients may engage during and after therapy. Therefore, integrating positive affect and its possible influence on impulsivity in clinical interventions may be useful for BPD patients and their treatment altogether.

Besides, the current study showed the relationship between the monitoring action dimension of metacognition, self-report impulsivity, and delay-related impulsivity. It has been known that several metacognitive interventions are included in treatment programs for several disorders. For example, increasing metacognitive abilities and individuals' awareness of their own cognitive biases are emphasized by metacognitive training interventions in BPD. However, the findings of the study represent preliminary findings of the undisturbed monitoring action activity regarding impulsive behaviors. Thus, it seems useful to focus on incentives of impulsive behavior even though individuals are mindful of their impulsiveness. This aspect may be integrated into clinical assessments and interviews. Moreover, we suggest that integrating interventions regarding monitoring action activity related issues for impulsive behaviors might be useful for coping with impulsiveness related disorder.

4.5. Strengths and Limitations of the Current Study, and Recommendations for Further Research

The study is thought to make contributions to the literature regarding several factors. First, in order to eliminate the possible confounding influence of prescriptions and diagnoses, participants were asked to state their current prescription and diagnosis status. Among all participants, 45 subjects were excluded by the reason of having a psychiatric/neurological diagnosis, and 43 subjects were excluded due to regular use of prescription medication. Thus, we could eliminate possible effects regarding this issue. Secondly, a priori power analysis indicated that the current study requires 242 participants, and 236 participants were recruited which approximates the initial target of the power analysis. Also, this is the first study in Turkey that compares two different impulsivity aspects (self-report and delay-related) in the BPD sample. Moreover, as mentioned before, there is no study that investigates BPD impulsivity with both self-report and DD task at the same time in a Turkish sample. As the aim of the study is to compare these two different types of impulsivity assessment in BPD is the first study conducted in Turkey. Besides, as far as our knowledge there is only one study that used the DD task in a Turkish sample and was conducted with opioid use disorder. Therefore, the study not only provides an

investigation of two different impulsivity measures (self-report and delay-related) in the BPD sample but also contributes to exploration regarding the utility of the DD task in the Turkish sample which is not commonly used. Furthermore, the study is providing a new insight by investigating associations of impulsivity, task-related metacognition, and dysfunctional metacognitive beliefs at the same time in BPD which was never been investigated.

On the other hand, the current study also has some limitations. First of all, this study was carried out by examining the BPD feature instead of focusing on a clinical sample. Findings of the study might vary when conducted in the clinical sample patients with BPD diagnosis. Also, the data was collected online. Although it has been considered as a useful way to data gathering, it has some disadvantageous aspects such as technical problems derived from the internet connection, lower response rates, less representative sample (Hunter, 2012; Lefever et al., 2007).

The other limitation of the study was linked to Covid-19. Data collection was carried out during the coronavirus pandemic which is a social isolation process. Therefore, it should be noted that the current study might be affected by these extraordinary times as it is all around the world.

An additional limitation of the study was the self-report assessment of the current emotional state by PANAS. Even though PANAS is the most widely used assessment tool for measuring emotional state and it has strong psychometric properties, psychophysiological methods might be more useful for detecting current affect to eliminate biases (Chapman et al., 2008; Tran, 2013). Furthermore, given that the affective dysfunctionality in BPD patients, they may not evaluate their current emotions accurately. Hence findings regarding affect-related impulsivity of the current study must be interpreted with caution. Moreover, the other limitation of the current study was the lack of affect induction in the examination of the affect related impulsivity. Future research should be conducted to address this issue.

In addition to these limitations, future research should investigate whether the manifestation of the different aspects of impulsivity differentiates across BPD patients with different comorbidities. Also, considering various administration procedures of the DD task as outlined before, trying to replicate the findings of the current study with different

procedures of the DD task will be beneficial in terms of the soundness of the measurement practices.

4.6. Conclusion

The main aim of this thesis was to compare two different aspects of impulsivity (self-report and delay-related) in the BPD feature. Although previous studies have investigated the comparison of self-report and delay-related impulsivity in the BPD sample, they have indicated mixed results, and this comparison has never been conducted in a Turkish sample. The current study demonstrated that these two-impulsivity aspects might have different mechanisms in terms of manifestation of BPD impulsivity by highlighting that delay-related impulsivity does not play a central role as trait impulsivity in this population. Also, it was aimed to examine the relevance of affect in the relationship between BPD and impulsivity. Results of the study indicated that a positive affect state might be as important as a negative affect regarding impulsivity. The last aim of the current study was to explore individuals' monitoring action activity regarding their impulsivity. Results showed that individuals might be aware of how they were impulsive. Taken together, results of the current study suggested that while trait impulsivity can be defined as a core component of the BPD, delay-related impulsivity seems unimpaired indicating reward-based decision-making impulsivity might not be a core feature of the BPD. However, the role of current affect may be important in delay-related impulsivity in BPD. Besides, the findings of the current study represent preliminary findings of the undisturbed monitoring action activity regarding impulsive behavior.

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APPENDICES

APPENDIX 1: INFORMED CONSENT FORM

Bilgilendirilmiş Onam Formu

Bu araştırma, Başkent Üniversitesi Klinik Psikoloji Tezli Yüksek Lisans Programı öğrencisi Cemre Karaarslan tarafından Dr. Öğr. Üyesi Elvin Doğutepe danışmanlığında yürütülen bir tez çalışmasıdır. Araştırmanın amacı, kişilik özellikleri ile ilişkili süreçlerin incelenmesidir. Araştırmaya katılmayı kabul ederseniz, sizden beklenen, ölçek setinde yer alan bir dizi soruyu derecelendirme ölçeği üzerinde yanıtlamanız olacaktır. Bu ölçeği tamamlamanız yaklaşık olarak 25 dakikanızı alacaktır.

Araştırmaya katılımınız tamamen gönüllülük temelinde olmalıdır. Ölçek setinde, sizden kimlik veya kurum belirleyici hiçbir bilgi istenmemektedir. Cevaplarınız tamamıyla gizli tutulacak, sadece araştırmacılar tarafından değerlendirilecektir.

Yapılan uygulama sonrasında kendinizi iyi hissetmediğinizi düşünmeniz durumunda ya da araştırmayla ilgili daha fazla bilgi almak için cemrekaraarslann@gmail.com e-posta adresinden araştırmacıya ulaşabilirsiniz.

Bu çalışmaya tamamen gönüllü olarak katılıyorum ve istediğim zaman katılımı sonlandırabileceğimi biliyorum. Verdiğim bilgilerin bilimsel amaçlı yayımlarda kullanılmasını kabul ediyorum.

○ *Okudum ve kabul ediyorum*

APPENDIX 2: DEMOGRAPHIC INFORMATION FORM

Cinsiyet:

○ K

○ E

Yaş: _____

Son bitirdiğiniz eğitim düzeyini seçiniz:

○ İlkokul

○ Ortaokul

○ Lise

○ Lisans

○ Lisansüstü

Herhangi bir Psikiyatrik veya Nörolojik Tanınız var mı?

○ Evet

○ Hayır

Varsa Nedir? _____

Düzenli olarak kullandığınız bir ilaç var mı?

○ Evet

○ Hayır

Varsa Nedir? _____

APPENDIX 3: TASK-RELATED METACOGNITION QUESTIONNAIRE

Az önce tamamlamış olduğunuz ve sizden iki para miktarı arasında bir seçim yapmanızın istendiği görevde vermiş olduğunuz kararları ne kadar kazançlı buluyorsunuz?

(1)   (2)   (3)   (4)   (5)

(1) Hiç kazançlı değil

(2) Biraz kazançlı

(3) Orta derecede kazançlı

(4) Oldukça kazançlı

(5) Çok kazançlı

APPENDIX 4: BORDERLINE PERSONALITY INVENTORY

Aşağıdaki cümlelerden size uygun olanlarını işaretleyiniz.		
1. Sık sık panik nöbetleri geçiririm.	**DOĞRU**	**YANLIŞ**
2. Son zamanlarda beni duygusal olarak etkileyen hiçbir şey olmadı.	**DOĞRU**	**YANLIŞ**
3. Çoğu kez gerçekte kim olduğumu merak ederim.	**DOĞRU**	**YANLIŞ**
4. Çoğu kez başıma iş açacak risklere girerim.	**DOĞRU**	**YANLIŞ**
5. Başkaları bana yoğun ilgi gösterdikleri zaman kendimi boğulmuş hissederim.	**DOĞRU**	**YANLIŞ**
6. Bazen içimde bana ait olmayan başka bir kişi ortaya çıkar.	**DOĞRU**	**YANLIŞ**
7. Gerçekte olmadığı halde acayip şekiller veya görüntüler gördüğüm oldu.	**DOĞRU**	**YANLIŞ**
8. Bazen çevremdeki insanlar ve nesnelerin gerçek olmadığını hissederim.	**DOĞRU**	**YANLIŞ**
9. Başkalarına yönelik duygularım bir uçtan bir uca çok hızlı değişir (Ör. Sevgi ve beğeniden nefret ve hayal kırıklığına).	**DOĞRU**	**YANLIŞ**
10. Çoğu kez değersizlik ya da umutsuzluk duygusuna kapılırım.	**DOĞRU**	**YANLIŞ**
11. Çoğu kez paramı çarçur ederim ya da kumarda kaybederim.	**DOĞRU**	**YANLIŞ**
12. Gerçekte kimse olmadığı halde hakkımda konuşan sesler duyduğum oldu.	**DOĞRU**	**YANLIŞ**
13. Eğer 12. maddeye "evet" dediyseniz aşağıdaki cümlelerden sizin için uygun olanını seçiniz:	**DOĞRU**	**YANLIŞ**
a. Bu sesler benim dışımdan gelmiştir. b. Bu sesler içimden gelmiştir.		
14. Yakın ilişkilerde hep incinirim.	**DOĞRU**	**YANLIŞ**
15. Bana uymayan biçimde hissettiğim ya da davrandığım oldu.	**DOĞRU**	**YANLIŞ**
16. Bir kukla gibi dışarıdan yönetiliyormuş ve yönlendiriliyormuş gibi hissettiğim oldu.	**DOĞRU**	**YANLIŞ**

17. Herhangi birine fiziksel olarak saldırıda bulunduğum oldu.	**DOĞRU**	**YANLIŞ**
18. Düşüncelerim başkaları tarafından okunuyormuş gibi hissettiğim oldu.	**DOĞRU**	**YANLIŞ**
19. Bazen gerçekte suç işlemediğim halde, sanki işlemişim gibi suçluluk hissederim.	**DOĞRU**	**YANLIŞ**
20. Bilerek kendime bedensel zarar verdiğim oldu.	**DOĞRU**	**YANLIŞ**
21. Bazen gerçekte olmadığı halde insanların ve nesnelerin görünümlerinin değiştiği hissine kapılırım.	**DOĞRU**	**YANLIŞ**
22. Yoğun dini uğraşlarım olmuştur.	**DOĞRU**	**YANLIŞ**
23. Duygusal ilişkilerimde çoğunlukla ne tür bir ilişki istediğimden emin olamam.	**DOĞRU**	**YANLIŞ**
24. Bazen bir kahin gibi gelecekle ilgili özel hislerim olur.	**DOĞRU**	**YANLIŞ**
25. Bir ilişki ilerledikçe kendimi kapana kısılmış gibi hissederim.	**DOĞRU**	**YANLIŞ**
26. Gerçekte kimse olmadığı halde bir başka insanın varlığını hissettiğim oldu.	**DOĞRU**	**YANLIŞ**
27. Bazen bedenim ya da bedenimin bir kısmı bana acayip veya değişmiş gibi görünür.	**DOĞRU**	**YANLIŞ**
28. İlişkiler çok ilerlerse, çoğunlukla koparma gereksinimi duyarım.	**DOĞRU**	**YANLIŞ**
29. Bazen birilerinin peşimde olduğu hissine kapılırım.	**DOĞRU**	**YANLIŞ**
30. Sık sık uyuşturucu kullanırım (esrar, hap gibi).	**DOĞRU**	**YANLIŞ**
31. Başkalarını kontrol altında tutmaktan hoşlanırım.	**DOĞRU**	**YANLIŞ**
32. Bazen özel biri olduğumu hissederim.	**DOĞRU**	**YANLIŞ**
33. Bazen dağılıyormuşum gibi hissederim.	**DOĞRU**	**YANLIŞ**
34. Bazen bana bir şeyin gerçekte mi yoksa yalnızca hayalimde mi olduğunu ayırt etmek zor gelir.	**DOĞRU**	**YANLIŞ**
35. Çoğu kez sonuçlarını düşünmeden içimden geldiği gibi davranırım.	**DOĞRU**	**YANLIŞ**
36. Bazen gerçek olmadığım duygusuna kapılırım.	**DOĞRU**	**YANLIŞ**

37. Bazen bedenim yokmuş ya da bir kısmı eksikmiş hissine kapılırım.	**DOĞRU**	**YANLIŞ**
38. Çoğu kez kabus görürüm.	**DOĞRU**	**YANLIŞ**
39. Çoğu kez başkaları bana gülüyormuş ya da hakkımda konuşuyormuş hissine kapılırım.	**DOĞRU**	**YANLIŞ**
40. Çoğu kez insanlar bana düşmanmış gibi gelir.	**DOĞRU**	**YANLIŞ**
41. İnsanların kendi düşüncelerini benim zihnime soktuklarını hissettiğim oldu.	**DOĞRU**	**YANLIŞ**
42. Çoğu kez gerçekten ne istediğimi bilmem.	**DOĞRU**	**YANLIŞ**
43. Geçmişte intihar girişiminde bulundum.	**DOĞRU**	**YANLIŞ**
44. Bazen ciddi bir hastalığım olduğuna inanırım.	**DOĞRU**	**YANLIŞ**
45. "Alkol, uyuşturucu ya da hap alışkanlığım vardır". Eğer yanıtınız "evet" ise aşağıdakilerden uygun olanlarını işaretleyiniz. a. Alkol b. Uyuşturucu c. Hap	**DOĞRU**	**YANLIŞ**
49. Aşağıdaki konularla ilgili sorulan sorularda çoğu kez kendimi rahatsız hissederim. a. Politika b. Din c. Ahlak (iyi-kötü)	**DOĞRU**	**YANLIŞ**
50. Bazen aklımdan birilerini öldürme düşüncesi geçer.	**DOĞRU**	**YANLIŞ**
51. Yasalarla başımın derde girdiği oldu.	**DOĞRU**	**YANLIŞ**
52. Yukarıdaki maddelerde anılan yaşantılardan herhangi birini ilaç etkisi altında yaşadığınız oldu mu? Eğer yanıtınız "evet" ise ilgili maddelerin numaralarını yazınız: (............................)	**DOĞRU**	**YANLIŞ**
53. Yukarıdaki maddelerde anılan yaşantılardan herhangi birini psikoterapi sırasında yaşadığınız oldu mu? Eğer yanıtınız "evet" ise ilgili maddelerin numaralarını yazınız: (............................)	**EVET**	**HAYIR**

APPENDIX 5: METACOGNITION QUESTIONNAIRE-30

Bu anket kişilerin kendi düşüncelerine ilişkin inançlarını incelemektedir. Aşağıda bireyler tarafından ifade edilmiş bazı inanç maddeleri listelenmiştir. Lütfen her bir maddeyi okuyarak her birine ne kadar katıldığınızı uygun rakamı işaretleyerek belirtiniz (1: kesinlikle katılmıyorum; 2: kısmen katılmıyorum; 3 kısmen katılıyorum; 4: kesinlikle katılıyorum). Lütfen tüm maddeleri cevaplandırınız. Bu ankette doğru ya da yanlış cevap bulunmamaktadır.

1. Endişelenmek gelecekteki problemlerden kaçınmama yardımcı olur.	(1)	(2)	(3)	(4)
2. Endişelenmem benim için tehlikelidir.	(1)	(2)	(3)	(4)
3. Aklımdan geçenlerle çok uğraşırım.	(1)	(2)	(3)	(4)
4. Endişe ede ede kendimi hasta edebilirim.	(1)	(2)	(3)	(4)
5. Bir problem üzerinde düşünürken zihnimin nasıl çalıştığının farkındayımdır.	(1)	(2)	(3)	(4)
6. Eğer beni endişelendiren bir düşünceyi kontrol edemezsem ve bu gerçekleşirse, benim hatam olur.	(1)	(2)	(3)	(4)
7. Düzenliliğimi sürdürebilmem için endişe etmeye ihtiyacım var.	(1)	(2)	(3)	(4)
8. Kelimeler ve isimler konusunda belleğime güvenim pek yoktur.	(1)	(2)	(3)	(4)
9. Ne kadar engellemeye çalışırsam çalışayım, endişe verici düşüncelerim devam eder.	(1)	(2)	(3)	(4)
10. Endişelenmek kafamdaki düşünceleri düzene sokmama yardım eder.	(1)	(2)	(3)	(4)
11. Endişe verici düşünceler aklıma geldiğinde onları görmezden gelemiyorum.	(1)	(2)	(3)	(4)
12. Düşüncelerimi izlerim.	(1)	(2)	(3)	(4)
13. Düşüncelerimi her zaman kontrol altında tutmalıyım.	(1)	(2)	(3)	(4)
14. Belleğim zaman zaman beni yanıltır.	(1)	(2)	(3)	(4)
15. Belirli düşüncelerimi kontrol etmediğim için cezalandırılacağım.	(1)	(2)	(3)	(4)
16. Endişelerim beni delirtebilir.	(1)	(2)	(3)	(4)

17. Düşündüğümün her an farkındayımdır.	(1)	(2)	(3)	(4)
18. Zayıf bir belleğim vardır.	(1)	(2)	(3)	(4)
19. Dikkatim zihnimin nasıl çalıştığıyla meşguldür.	(1)	(2)	(3)	(4)
20. Endişelenmek bir şeylerin üstesinden gelmeme yardım eder.	(1)	(2)	(3)	(4)
21. Düşüncelerimi kontrol edememek bir zayıflık işaretidir.	(1)	(2)	(3)	(4)
22. Endişelenmeye başladığım zaman kendimi durduramam.	(1)	(2)	(3)	(4)
23. Endişelenmek problemleri çözmede bana yardımcı olur.	(1)	(2)	(3)	(4)
24. Bir yerleri hatırlama konusunda belleğime pek güvenmem.	(1)	(2)	(3)	(4)
25. Belirli şeyleri düşünmek kötüdür.	(1)	(2)	(3)	(4)
26. Belleğime güvenmem.	(1)	(2)	(3)	(4)
27. Eğer düşüncelerimi kontrol edemezsem işlerimi sürdüremem.	(1)	(2)	(3)	(4)
28. İyi çalışabilmek için endişelenmeye ihtiyacım vardır.	(1)	(2)	(3)	(4)
29. Olayları hatırlama konusunda belleğime pek güvenmem.	(1)	(2)	(3)	(4)
30. Düşüncelerimi sürekli gözden geçiririm	(1)	(2)	(3)	(4)

APPENDIX 6: MONETARY CHOICE QUESTIONNAIRE
TURKISH FORM

Verilen seçenekler arasında size sunulan ödülleri gerçekten elinize geçecekmiş gibi seçim yapmanız bekleniyor. Lütfen şu anki maddi durumunuzdan bağımsız olarak verilen 27 seçeneğin her biri için, hangi ödülü seçeceğinizi belirtiniz: Bugün, daha küçük bir ödülü mü yoksa verilen günler içerisinde daha büyük bir ödülü mü?

1. Bugün 54 TL almayı mı tercih ederdiniz 117 gün sonra 54 TL almayı mı?

◯ Bugün 54 TL

◯ 117 gün sonra 55 TL

2. Bugün 55 TL almayı mı tercih ederdiniz 61 gün sonra 75 TL almayı mı?

◯ Bugün 55 TL

◯ 61 gün sonra 75 TL

3. Bugün 19 TL almayı mı tercih ederdiniz 53 gün sonra 25 TL almayı mı?

◯ Bugün 19 TL

◯ 53 gün sonra 25 TL

4. Bugün 31 TL almayı mı tercih ederdiniz 7 gün sonra 85 TL almayı mı?

◯ Bugün 31 TL

◯ 7 gün sonra 85 TL

5. Bugün 14 TL almayı mı tercih ederdiniz 19 gün sonra 25 TL almayı mı?

◯ Bugün 14 TL

◯ 19 gün sonra 25 TL

6. Bugün 47 TL almayı mı tercih ederdiniz 160 gün sonra 50 TL almayı mı?

◯ Bugün 47 TL

◯ 160 gün sonra 50 TL

7. Bugün 15 TL almayı mı tercih ederdiniz 13 gün sonra 35 TL almayı mı?

◯ Bugün 15 TL

◯ 13 gün sonra 35 TL

8. Bugün 25 TL almayı mı tercih ederdiniz 14 gün sonra 60 TL almayı mı?

◯ Bugün 25 TL

◯ 14 gün sonra 60 TL

9. Bugün 78 TL almayı mı tercih ederdiniz 162 gün sonra 80 TL almayı mı?

◯ Bugün 78 TL

◯ 162 gün sonra 80 TL

10. Bugün 40 TL almayı mı tercih ederdiniz 62 gün sonra 55 TL almayı mı?

○ Bugün 40 TL

○ 62 gün sonra 55 TL

11. Bugün 11 TL almayı mı tercih ederdiniz 7 gün sonra 30 TL almayı mı?

○ Bugün 11 TL

○ 7 gün sonra 30 TL

12. Bugün 67 TL almayı mı tercih ederdiniz 119 gün sonra 75 TL almayı mı?

○ Bugün 67 TL

○ 119 gün sonra 75 TL

13. Bugün 34 TL almayı mı tercih ederdiniz 186 gün sonra 35 TL almayı mı?

○ Bugün 34 TL

○ 186 gün sonra 35 TL

14. Bugün 27 TL almayı mı tercih ederdiniz 21 gün sonra 50 TL almayı mı?

○ Bugün 27 TL

○ 21 gün sonra 50 TL

15. Bugün 69 TL almayı mı tercih ederdiniz 91 gün sonra 85 TL almayı mı?

○ Bugün 69 TL

○ 91 gün sonra 85 TL

16. Bugün 49 TL almayı mı tercih ederdiniz 89 gün sonra 60 TL almayı mı?

○ Bugün 49 TL

○ 89 gün sonra 60 TL

17. Bugün 80 TL almayı mı tercih ederdiniz 157 gün sonra 85 TL almayı mı?

○ Bugün 80 TL

○ 157 gün sonra 85 TL

18. Bugün 24 TL almayı mı tercih ederdiniz 29 gün sonra 35 TL almayı mı?

○ Bugün 24 TL

○ 29 gün sonra 35 TL

19. Bugün 33 TL almayı mı tercih ederdiniz 14 gün sonra 80 TL almayı mı?

○ Bugün 33 TL

○ 14 gün sonra 80 TL

20. Bugün 28 TL almayı mı tercih ederdiniz 179 gün sonra 30 TL almayı mı?

○ Bugün 28 TL

○ 179 gün sonra 30 TL

21. Bugün 34 TL almayı mı tercih ederdiniz 30 gün sonra 50 TL almayı mı?

○ Bugün 34 TL

○ 30 gün sonra 50 TL

22. Bugün 25 TL almayı mı tercih ederdiniz 80 gün sonra 30 TL almayı mı?

○ Bugün 25 TL

○ 80 gün sonra 30 TL

23. Bugün 41 TL almayı mı tercih ederdiniz 20 gün sonra 75 TL almayı mı?

○ Bugün 41 TL

○ 20 gün sonra 75 TL

24. Bugün 54 TL almayı mı tercih ederdiniz 111 gün sonra 60 TL almayı mı?

○ Bugün 54 TL

○ 111 gün sonra 60 TL

25. Bugün 54 TL almayı mı tercih ederdiniz 30 gün sonra 80 TL almayı mı?

○ Bugün 54 TL

○ 30 gün sonra 80 TL

26. Bugün 22 TL almayı mı tercih ederdiniz 136 gün sonra 25 TL almayı mı?

○ Bugün 22 TL

○ 136 gün sonra 25 TL

27. Bugün 20 TL almayı mı tercih ederdiniz 7 gün sonra 55 TL almayı mı?

○ Bugün 20 TL

○ 7 gün sonra 55 TL

APPENDIX 7: MONETARY-CHOICE QUESTIONNAIRE- ORIGINAL FORM

For each of the next 27 choices, please indicate which reward you would prefer:

the smaller reward today, or the larger reward in the specified number of days.

1. Would you prefer $54 today, or $55 in 117 days?

2. Would you prefer $55 today, or $75 in 61 days?

3. Would you prefer $19 today, or $25 in 53 days?

4. Would you prefer $31 today, or $85 in 7 days?

5. Would you prefer $14 today, or $25 in 19 days?

6. Would you prefer $47 today, or $50 in 160 days?

7. Would you prefer $15 today, or $35 in 13 days?

8. Would you prefer $25 today, or $60 in 14 days?

9. Would you prefer $78 today, or $80 in 162 days?

10. Would you prefer $40 today, or $55 in 62 days?

11. Would you prefer $11 today, or $30 in 7 days?

12. Would you prefer $67 today, or $75 in 119 days?

13. Would you prefer $34 today, or $35 in 186 days?

14. Would you prefer $27 today, or $50 in 21 days?

15. Would you prefer $69 today, or $85 in 91 days?

16. Would you prefer $49 today, or $60 in 89 days?

17. Would you prefer $80 today, or $85 in 157 days?

18. Would you prefer $24 today, or $35 in 29 days?

19. Would you prefer $33 today, or $80 in 14 days?

20. Would you prefer $28 today, or $30 in 179 days?

21. Would you prefer $34 today, or $50 in 30 days?

22. Would you prefer $25 today, or $30 in 80 days?

23. Would you prefer $41 today, or $75 in 20 days?

24. Would you prefer $54 today, or $60 in 111 days?

25. Would you prefer $54 today, or $80 in 30 days?

26. Would you prefer $22 today, or $25 in 136 days?

27. Would you prefer $20 today, or $55 in 7 days?

APPENDIX 8: BARRATT IMPULSIVENESS SCALE-11

İnsanlar farklı durumlarda gösterdiği düşünce ve davranışları ile birbirlerinden ayrılırlar. Bu test bazı durumlarda nasıl düşündüğünüzü ve davrandığınızı ölçen bir testtir. Lütfen her cümleyi okuyunuz ve size en uygun kısma X koyunuz. Cevaplamak için çok zaman ayırmayınız. Hızlı ve dürüstçe cevap veriniz

	Hiçbir Zaman	Bazen	Sıklıkla	Her zaman
1. İşlerimi dikkatle planlarım.				
2. Düşünmeden iş yaparım.				
3. Hızla karar veririm.				
4. Hiç bir şeyi dert etmem.				
5. Dikkat etmem.				
6. Uçuşan düşüncelerim var.				
7. Seyahatlerimi çok önceden planlarım.				
8. Kendimi kontrol edebilirim.				
9. Kolayca konsantre olurum.				
10. Düzenli para biriktirim.				
11. Derslerde veya oyunlarda yerimde duramam.				
12. Dikkatli düşünen birisiyim.				
13. İş güvenliğine dikkat ederim.				
14. Düşünmeden bir şeyler söylerim.				
15. Karmaşık problemler üzerine düşünmeyi severim.				
16. Sık sık iş değiştiririm.				
17. Düşünmeden hareket ederim.				
18. Zor problemler çözmem gerektiğinde				

kolayca sıkılırım.				
19. Aklıma estiği gibi hareket ederim.				
20. Düşünerek hareket ederim.				
21. Sıklıkla evimi değiştiririm.				
22. Düşünmeden alışveriş yaparım.				
23. Aynı anda sadece bir tek şey düşünebilirim.				
24. Hobilerimi değiştiririm.				
25. Kazandığımdan daha fazla harcarım.				
26. Düşünürken sıklıkla zihnimde konuyla ilgisiz düşünceler oluşur.				
27. Şu an ile gelecekten daha fazla ilgilenirim.				
28. Derslerde veya sinemada rahat oturamam.				
29. Yap-boz/puzzle çözmeyi severim.				
30. Geleceğini düşünen birisiyim.				

APPENDIX 9: POSITIVE AND NEGATIVE AFFECT SCHEDULE

Bu ölçek farklı duyguları tanımlayan birtakım sözcükler içermektedir. **Şu an** kendinizi nasıl hissettiğinizi düşünüp her maddeyi okuyun. Uygun cevabı her maddenin yanında ayrılan yere (puanları daire içine alarak) işaretleyin. Cevaplarınızı verirken aşağıdaki puanları kullanın.

	Çok az veya hiç	Biraz	Ortalama	Oldukça	Çok fazla
1. İlgili	1	2	3	4	5
2. Sıkıntılı	1	2	3	4	5
3. Heyecanlı	1	2	3	4	5
4. Mutsuz	1	2	3	4	5
5. Güçlü	1	2	3	4	5
6. Suçlu	1	2	3	4	5
7. Ürkmüş	1	2	3	4	5
8. Düşmanca	1	2	3	4	5
9. Hevesli	1	2	3	4	5
10. Gururlu	1	2	3	4	5
11. Asabi	1	2	3	4	5
12. Uyanık (Dikkati açık)	1	2	3	4	5
13. Utanmış	1	2	3	4	5
14. İlhamlı	1	2	3	4	5
15. Sinirli	1	2	3	4	5
16. Kararlı	1	2	3	4	5
17. Dikkatli	1	2	3	4	5
18. Tedirgin	1	2	3	4	5
19. Aktif	1	2	3	4	5

20. Korkmuş	1	2	3	4	5

APPENDIX 10: ETHICAL APPROVAL

İlgili Makama

Üniversitemiz Sosyal Bilimler Enstitüsü Klinik Psikoloji Tezli Yüksek Lisans Programı öğrencisi Cemre Karaaslan'ın Dr. Öğretim Üyesi Elvin Doğutepe'nin danışmanlığında yürütmekte olduğu "Mood, Motivational Impulsivity, and Metacognition in Borderline Personality Disorder Feature" başlıklı yüksek lisans tez çalışması değerlendirilmiş ve yapılmasında bir sakınca olmadığı tespit edilmiştir.
Bilgilerinize saygılarımızla sunarız.

Başkent Üniversitesi Sosyal ve Beşeri Bilimler ve Sanat Araştırma Kurulu

Ad, Soyad	Değerlendirme	İmza
Prof. Dr. M. Abdülkadir Varoğlu	Olumlu/~~Olumsuz~~	
Prof. Dr. Kudret Güven	Olumlu/Olumsuz	
Prof. Ali Sevgi	Olumlu/Olumsuz	
Prof. Dr. Işıl Bulut	Olumlu/~~Olumsuz~~	
Prof. Dr. Sadegül Akbaba Altun	Olumlu/~~Olumsuz~~	
Prof. Dr. Can Mehmet Hersek	Olumlu/~~Olumsuz~~	
Prof. Dr. Özcan Yağcı	Olumlu/Olumsuz	

APPENDIX 11: SUPPLEMENTARY ANALYSIS

11.1. Mann-Whitney U Test for Comparing Low and High BPD Feature on Task-Related Metacognition

In order to compare low and high BPD groups on task-related metacognition, an independent sample t-test was planned to carry out and required assumption checks were investigated. By the reason of the violation of the test assumptions for the task-related metacognition variable the Mann-Whitney U test was carried out as suggested (Allen et al., 2014). A Mann-Whitney U test indicated that group difference on TRMQ was not statistically significant ($U = 6014$, $z = -1.08$, $p = .28$) indicating individuals' task-related metacognition was not differentiated with regard to their BPD features.

Table 10. *Mann-Whitney U Test for Comparing Low and High BPD Feature on Task-Related Metacognition*

Variable	N	Mean rank	Sum of mean ranks	U	Z score	p-value
Low BPD Feature	147	122.09	17947.00	6014.00	-1.08	.28
High BPD Feature	89	112.57	10019.00			

Note. BPD Feature = Borderline Personality Feature

11.2. Comparison of Low and High BPD Feature on Affect

In order to compare low and high BPD groups on positive and negative affect one-way between subject, MANOVA planned to carry out and required assumption checks were investigated. It was found that Box M and Levene's statistic was significant at $\alpha = .05$ level which indicates homogeneity of variance/covariance matrices assumptions, the Mann-Whitney U test was conducted for each dependent variable.

11.2.1. Mann-Whitney U test for low and high BPD feature on positive affect

A Mann-Whitney U test indicated that group difference on positive affect was not statistically significant ($U = 6225$, $z = -.622$, $p = .53$) demonstrating individuals' positive affect was differentiated regarding their BPD features.

11.2.2. Mann-Whitney U test for low and high BPD feature on negative affect

A Mann-Whitney U test indicated that group difference negative affect was statistically significant demonstrating the negative affect levels of the high BPD feature group (*Mean Rank* =137.38, n = 236). were significantly higher than those of the low BPD feature group (*Mean Rank* = 107.07, n = 236).

Table 11. *Mann-Whitney U Test for Comparing Low and High BPD Feature on Negative Affect*

Variable	N	Mean rank	Sum of mean ranks	U	Z score	p-value
Low BPD Feature	147	107.07	15739.50	4861.500	-3.311	.001
High BPD Feature	89	137.38	12226.50			

Note. BPD Feature = Borderline Personality Feature

11.3. Test of the BPD Feature and Positive Affect, and Their Interaction

To investigate effect of BPD feature, positive affect, and their interaction on the measures of impulsivity, variables were categorized into groups. The BPD feature of the first group varied between 0 to 15, and it was named as low BPD Feature group; and scores through 16 to highest assigned to second group, which was named as high BPD Feature group. Positive affect groups were categorized into three groups based on the visual binning.

The positive affect of the first group varied between 0 to 25, and it was named as low positive affect group. The second group varied between 25 to 31, and it was named as medium affect group. The scores through 31 to highest assigned to last group and it was named as high positive group. Consequently, 6 independent groups were constructed (low BPD feature-low positive affect, n = 49; low BPD feature- medium positive affect n= 50; low BPD feature-high positive affect, n= 48; high BPD feature-low positive affect, n= 30; high BPD feature- medium positive affect n= 31; high BPD feature-high positive affect, n= 28).

A 2 x 3 between-subjects MANOVA was performed to investigate differences of BPD feature, positive affect, and their interaction on impulsivity. The BPD feature with two levels (low and high) based on BPI scores and positive affect with three levels (low, medium,

and high) based on PANAS scores were independent variables. The two impulsivity scores (overall k value in DD task and BIS-11) were dependent variables (n = 236).

Before conducting the MANOVA the data were examined in terms of required assumptions. Univariate normality was investigated with Shapiro-Wilk tests and boxplots. Also, no multivariate outliers were found in the data, showing the assumption of multivariate normality was not violated. Correlations between the dependent variables were not high, indicating multicollinearity was not of concern. Also, the relationships that did exist between the dependent variables were approximately linear. Finally, Box's M was nonsignificant at $\alpha = .001$, indicating that assumption of the homogeneity of variance-covariance matrices was supported.

Due to necessary assumptions were met by the data, a 2 x 3 between subject MANOVA was conducted. Results indicated significant main effect of BPD feature (F [2, 229] = 20.662, p = .000; *Wilk's Λ* = .847, *partial $\eta2$* = .15) and significant main effect of positive affect (F [4, 458] = 3.165, p = *.014*; *Wilk's Λ* = .947, *partial $\eta2$* = .03) on impulsivity (both DD task and BIS-11). However, interaction effect of the BPD feature and positive affect (F [4, 458] = 2.330, p = .055; *Wilk's Λ* = .961, *partial $\eta2$* = .02) was not significant.

The alpha value was modified according to Bonferroni correction, and univariate analyses were conducted at Bonferroni adjusted level of .025 (.05/2) in order to inspect the effect of BPD feature and positive affect on DD task and BIS-11. Tests of between-subject effects showed that the main effect for BPD feature was significant on BIS-11 (F [1, 230] = 39.579, p = .000; *partial $\eta2$* = .15). Individuals who have a high BPD feature (M = 65.62, *S.D.* = 8.94) have higher self-report impulsivity scores in BIS-11 than individuals with a low BPD feature (M = 58.63, *S.D.* = 8.00). ANOVAs also demonstrated that the main effect for positive affect was neither significant on BIS-11 (F [2, 230] = 2.588, p = .077; *partial $\eta2$* = .15) nor on DD task (F [2, 230] = 2.976, p = .053; *partial $\eta2$* = .00).