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THE ROLE OF TRAUMA, BASIC AFFECTIVE FEATURES, AND THE ABILITY TO UNDERSTAND AND EXPRESS EMOTIONS IN IRRITABLE BOWEL SYNDROME

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The Role of Trauma, Basic Affective Features, and the Ability to Understand and Express Emotions in Irritable Bowel Syndrome

İrritabl Barsak Sendromunda Travmanın, Temel Duygulanım Özelliklerinin, Duyguları Anlayabilme ve İfade Edebilme Becerisinin Rolü

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Abstract

The aim of the current study was to explore the role of trauma, basic affective features, and the ability to understand and express emotions in irritable bowel syndrome. An IBS group of 71 adults was compared with a control group of 71 adults on a number of measures including the Traumatic Events Checklist (TEC), Toronto Alexithymia Scale (TAS-20) and Affective Neuroscience Personality Scale (ANPS) together with the Demographic Information Form. The results revealed that IBS patients reported higher levels on all categories of trauma, and the group difference was highest with regards to emotional neglect experience. Most of the traumatic events were reported to have occurred in childhood in both the IBS group and the control group. When compared to the control group, the IBS group reported higher levels of trauma during childhood, adolescence and adulthood with the highest difference seen in the period of adolescence. IBS patients also reported higher degrees of alexithymia in comparison to the control group. In terms of basic affective features, IBS patients reported higher scores in fear and sadness, and lower scores in playfulness compared to the control group, as expected. The most significant difference among the two groups was seen in the feeling of sadness. In additional analyses, only emotional neglect, sadness and lack of playfulness were found to be the variables that contributed to predicting IBS status. The limitations, fundamental theoretical and clinical implications of this study were discussed.

Keywords: psychosomatics, somatization, irritable bowel syndrome, trauma, basic affective features

Özet

Bu çalışmanın amacı, irritabl barsak sendromunda travmanın, temel duygulanım özelliklerinin ve duyguları anlama ve ifade etme yeteneğinin rolünü araştırmaktır. 71 yetişkinden oluşan İBS grubuyla 71 yetişkinden oluşan kontrol grubu, Travmatik Yaşantılar Ölçeği (TEC), Toronto Aleksitimi Ölçeği (TAS-20), Afektif Sinirbilim Kişilik Ölçeği (ANPS) ve Demografik Bilgi Formu içeren ölçeklerle karşılaştırılmıştır. Sonuçlar, İBS hastalarında tüm travma kategorilerinde daha yüksek düzeyler olduğunu, ancak grup farkının duygusal ihmal deneyimleri açısından en yüksek olduğunu ortaya koymuştur. Travmatik olayların çoğunun, hem İBS grubunda hem de kontrol grubunda çocukluk döneminde meydana geldiği bildirilmiştir. Kontrol grubuyla karşılaştırıldığında İBS grubu, en yüksek farkın ergenlik döneminde görülmesiyle birlikte travmayı çocukluk, ergenlik ve yetişkinlik döneminde daha yüksek düzeyde bildirmiştir. İBS hastaları kontrol grubuna kıyasla daha yüksek düzeyde aleksitimi bildirmiştir. Temel duygulanım özellikleri açısından İBS hastaları kontrol grubuyla karşılaştırıldığında beklenildiği gibi korku ve üzüntüde daha yüksek puanlar ve oyunculukta daha düşük puanlar bildirmiştir. İki grup arasındaki en önemli fark, üzüntü duygusunda görülmüştür. Ek analizlerde, sadece duygusal ihmal, üzüntü ve oyunculuk eksikliği, İBS statüsünü tahmin etmede rol oynayan değişkenler olarak bulunmuştur. Bu çalışmanın sınırlılıkları, temel teorik ve klinik etkileri tartışılmıştır.

Anahtar Kelimeler: psikosomatikler, somatizasyon, irritabl barsak sendromu, travma, temel duygulanım özellikleri

INTRODUCTION

Psychosomatic illnesses can be defined as disorders in which physical symptoms are caused or intensified by psychological factors, such as can be the case with migraine, lower back pain and irritable bowel syndrome. It is a well-known fact that psychological factors play a significant role in the development of organic illnesses and that physical symptoms experienced by the patient are influenced by interdependent factors including biological, psychological, social and cultural factors. Many current studies claim that there is a strong connection between the mind and the body as part of a system in which irregularities or distortions in one part can negatively influence the other. In this biopsychosocial model, psychosocial problems can cause medical illnesses (psychosomatic), psychological symptoms can be caused by medical disorders (somatopsychic) and stress is related to physiological conditions (psychophysiologic). In determining the causes of an illness, all of these possible pathways need to be taken into account according to the biopsychosocial model. The biopsychosocial model helps to understand the relationships between psychosocial factors, physiological symptoms and behaviours, and clinical outcomes (Mayer, Naliboff, Chang, & Coutinho, 2001).The biopsychosocial model of illness and disease described by Engel (1977) constitutes the theoretical foundation for this study which aims to examine the relationship of trauma, affective experiences and development of irritable bowel syndrome (IBS).

Stress can be described as an acute threat to the homeostasis of an organism. The threat might be real (physical) or perceived (psychological) and triggered by events in the outside world or from within the organism. Stressors can trigger “fight or flight” responses, “freeze” responses (Chang, 2011) and adaptive responses which serve to maintain the stability of the internal environment and to assure the survival of the organism (Mayer et al., 2001). The early environment of an organism has a great impact on the development of

behavioural and hormonal responses to stress (Anisman, Zaharia, Meaney, & Merali, 1998). Early events interrupting this development, such as traumatic life events, have a strong association with a maladaptive stress response system; can lead to permanent damage to brain functioning. This can cause changes in stress-responsive neurobiological systems, which may increase susceptibility to disease (Nemeroff, 2004) and behavioural and social problems (Chang, 2011).

It has been difficult to define the distinction between stress and trauma. Based on the common sense model of the relationship between stress and trauma, trauma can simply be defined as an extreme form of stress. Trauma can be distinguished from stress by being described as an event that is unusual or "out of the normal range of experience" (Christopher, 2004). Childhood traumatic events, including abuse and violence, have been shown to change several biological pathways which can directly result in developing disease as well as moderating the severity and phenomenology of unrelated conditions such as migraine and fibromyalgia (Keeshin, Cronholm, & Strawn, 2012). Researchers assume that alterations in the hypothalamic–pituitary–adrenal (HPA) axis responsiveness can be implicated in pathogenesis in IBS patients (Videlock et al., 2009). Besides traumatic events in early life, the stress of abuse or trauma in later life can lead to bodily damage. This stress of abuse or trauma can also lead to an increase in anterior midcingulate activation, which is related to disinhibition and lowering of pain thresholds. The combination of central and visceral sensitization increases the experience of pain and other symptoms (Ringel et al., 2008). One recent meta-analysis of 23 studies from 1980 to 2008 indicated there is a significant association between sexual abuse and lifetime diagnosis of FGIDs and other symptoms such as nonspecific chronic pain, chronic pelvic pain, and fibromyalgia (Paras et al., 2009). Since the 1990s, many researches have come up with results claiming that there is a strong relationship between functional gastrointestinal disorders and a history of childhood and adult sexual trauma (Drossman, Talley, Leserman, Olden, & Barreiro, 1995). Another population based research also indicated that there is a significant association between having a history of sexual,

physical and emotional abuse and having IBS symptoms (Talley, Fett & Zinsmeister, 1995). In one study, the results indicated that women veterans who reported a high frequency of physical and sexual trauma with post-traumatic stress disorder have more IBS symptoms than control groups (While et al., 2010). In a study by Hislop, 31% of IBS patients reported that they had experienced parental death, divorce and separation and 61% of IBS patients reported that they had an unsatisfactory relationship with their parents. But, there was no control group to compare the scores in this study (Hislop, 1979). In this research, it is hypothesized that traumatic events during in early or later life might be a predicting factor in developing IBS.

The entire gastro-intestinal system is also sensitive to physical and psychological stressors (Outhoff, 2016). Stressors can affect bidirectional interactions on the brain-gut axis which are primary for regulating overall gut function in both healthy and diseased states. Any stress-induced dysregulation of the brain-gut axis may threaten the homeostasis of the organism (Rhee, Pothoulakis, & Mayer., 2009).

Irritable bowel syndrome (IBS) can be seen as "a disorder caused by stress-induced dysregulation of complex interactions along the brain-gut-microbiota axis, which involves the bidirectional, self-perpetuating communication between the central and enteric nervous systems, utilising autonomic, psychoneuroendocrine, pain modulatory and immune signalling pathways .... Symptoms of these (mal)adaptive changes may include constipation, diarrhoea, bloating and abdominal pain, manifesting clinically as IBS." (Outhoff, 2016, p.1). It was noted that the worldwide prevalence of IBS patients is approximately 10-15 percent of the general population (Lovell & Ford, 2012). It is also one of the most common diseases seen in primary care settings and speciality gastroenterology inflammatory practices (Mayer, 2008). It results in an increase in healthcare costs. Understanding the risk factors, including early life experiences and emotional temperament tendencies and triggering factors like psychosocial stressors involving traumatic life experiences, can help healthcare workers to

improve stress management approaches, and early and effective interventions to increase the patients' qualities of lives.

Stress induced events can dysregulate one's emotional stability. Dysregulated emotions escape from the individual's self-regulating, self-organizing reciprocal feedback loop and may pathologically change biopsychosocial systems in unpredictable ways. Intense affects can lead people to have physical symptoms in the presence of an inability to discharge. It was particularly stated that the duration of life can become shorter because of intense affects such as depressive affects, a violent shock (trauma), and a deep humiliation or disgrace (Miliora, 1998). Research about trauma survivors in German concentration camps shows that most of them experienced a chronic mourning syndrome, the feeling of no capacity to relate to others, intense guilt about their humiliated family members, and unresolved helplessness. In this case, the trauma survivors were unable to sublimate their intense affects through any channel. Instead, the survivors experienced their deep affects on a somatic level by showing physical symptoms such as tension headache, insomnia, and gastrointestinal disturbances; and physical diseases such as asthma, ulcer and hypertension (Hoppe, 1968).

From another perspective, somatic illnesses occur as consequences of a disturbance of the somatic equilibrium by emotional conflicts. Bion added that it might get discharged on soma from the rejection of emotions and affects. He claimed the mechanisms of archaic defences are in charge of the release in the body. In the early years of life when and mental capacities are not yet developed, the drive energy which cannot be absorbed and integrated mentally. The ego is unable to absorb drive charges at the level of mental representations and fantasies. Therefore, these experiences affect the body in the earliest months of life, such as the striated sensorimotor system (dorsal pains) and the smooth sensorimotor system (gastric pains). In this case, the ego is really vulnerable to the traumatic effects of inner and outer pressures, since drive energy cannot be discharged mentally, but only on a somatic level (Potamianou, 1990).

Especially tight control of negative emotions can have adverse impacts on physical health. How this might happen is not well explained but the underlying assumption is generally that inhibiting emotions lead to acute increases in physiological response parameters which do damage in the organism over the long term (Krantz & Manuck, 1984). Later work has shown that emotional suppression leads to acute increases in sympathetic activation in the body (Gross & Levenson, 1997). At this point it is important to investigate whether or not discharging emotions via understanding and expressing them might result in having less psychosomatic complaints. It is a significant question whether understanding and expressing what the individual feels during or after a stressful life experience can help her/him to cope with her/his stress. In this study, it is expected that the individuals who are better able to understand and express their emotions will be less likely to develop IBS symptoms.

Based on personality traits, there is no unique profile that discriminates between IBS patients and control groups (Levy et al., 2006). In one study, people who have irritable bowel syndrome show a higher score than people in a control group in terms of two dimensions of temperament and character features: “harm avoidance” which is a personality trait characterized by excessive worrying, fearfulness and pessimism and “self-transcendence” which is a personality trait characterized by having spiritual experiences such as a feeling of oneness with the universe (Taymur, Özen, Boratav & Güliter, 2007). IBS patients show inherent tendencies of behavioural inhibition in response to conditions which might be punishable, unrewarding and impeding. In order to avoid harm, they show social inhibition, escape behaviours from strangers, expectations of the worst scenario and fear of uncertainty. Although they develop some beneficial adaptations such as the ability to plan well in dangerous situations and having alternative plans for any unexpected condition, they suffer from maladaptive responses which lead them to feel as if they are in danger when there is none. Harm avoidance results in behavioural inhibition and anxiety. There is a high level of intolerance to stressful life events, which might lead to anxiety, phobias and depression among IBS

patients. IBS patients show neuroticism under the harm avoidance feature. However, we do not know which basic affects are predominant in their neuroticism. The Affective Neuroscience Personality Scale, which is developed to measure six basic affects (play, seek, care, fear, anger, and sadness systems) and spirituality. It enables us to investigate negative affects which are related to neuroticism. According to Panksepp (2010), it is important to understand the nature of the primary-process emotional affects in order to increase the development of better preclinical models of psychiatric disorders, which can also help the clinicians to use new and better ways to understand the core aspects of the patients' problems. Stressors might lead IBS patients to inhibit their behaviours, making it more difficult for IBS patients to express their stress or negative emotions such as fear, anger and sadness and discharge them. In this case, they are expected to experience high levels of fear, anger and sadness compared to the normal population. According to the theory which the Affective Neuroscience Personality Scale relied on, when the fear system activates there may be worry, anxiety, freezing or fleeing behaviour (Panksepp, Fuchs & Iacobucci, 2011). Activation in the anger system can lead to aggressiveness and fight behaviour, instead of flight behaviour (Panksepp, 1998). Based on this knowledge, IBS patients who show harm avoidant behaviours will be also expected to show more fear than anger. Related to positive affects such as play and seek, IBS patients are expected to show less playfulness and seeking affects because of having escape behaviours and behavioural inhibitions. It prevents them from transforming their stress-induced negative affects into adaptive stress responses because of the lack of playfulness and seeking. All these processes work as a feedback loop.

The Affective Neuroscience Personality Scale (ANPS) helps us to describe basic negative and positive affects which are experienced by IBS patients and lead them to have different personality traits from others. By the help of ANPS, it seems possible to gain some insight about the underlying basic affect systems of IBS patients. Discovering the distinctive affects of IBS patients will help us to

understand how affects such as temperamental features might have an impact in perceiving stress stimulators, in responding to traumatic life experiences and triggering chronic symptoms in the body.

1.1. PSYCHOSOMATICS

1.1.1. Psychosomatics Symptoms

The term psychosomatics was first used by an Expert Committee of the Health Organization in two separate meanings after World War II. One of its meanings was about an overall perspective towards medicine, not just focusing on the sick organs, but also considering the patient's situation in his/her environment socially and psychologically. Another meaning is restricted to only the diseases in which psychological effects play an important role. The term of psychosomatic is still an argumentative issue (Bronstein, 2011).

Meanwhile, the term of psychosomatic is also used interchangeably with *mindbody* in many sources. Psychosomatic is tried to be understood by focusing on the ways in which disorders emerge. In far broader explanation, psychosomatic disorders are categorized in two ways: those disorders which are directly triggered by unconscious emotions such as pain problems, gastrointestinal conditions, irritable bowel syndrome, and allergies and also disorders in which unconscious emotions might play an important role in their cause, yet are not the only factor which leads to these illnesses, such as autoimmune disorders, cardiovascular condition and cancer (Sarno, 2007).

According to Fischbein (2011), there is a splitting between mind and body in psychosomatic pathology. He suggested the communication between psyche and soma among psychosomatics can be either classical psychosomatic illnesses or random episodes where the body has shown its reactions to the person's inability to process mental conflicts. He also considers somatic events as reparation through which the patient tries to restore self-integration and ties with the reality. Fischbein describes psychosomatics as illnesses where somatic destructions appear on the ground of unconscious psychic conflicts.

Hungarian psychoanalysts, especially Ferenczi, contributed to the field of psychosomatics. According to Ferenczi, the body is as a kind of tool of the mind that can convey its own hidden messages, and forms a unit together with mind. Meanwhile, the body helps hidden psychic conflicts to reveal themselves. He also interprets that all frustrating experiences in early ages can display themselves as physical damage. He disputes that patients who experience somatic complaints reestablish their early stage of ego in terms of functioning of the mind by being regressed. Another Hungarian psychoanalyst Alexander considers the body as a reactive system, which can either respond to symbols at the unconscious level, or express itself through the parasympathetic nervous system without responding to any symbol. He claims that conversion disorder expresses itself through sensory-perceptive symptoms such as hysterical paralyses. Yet, if it happens to the parasympathetic nervous system, there is no expression of the symbols. For instance, peptic ulcer does not have any physiological cause by itself, yet it is understood that there is a bodily reaction towards chronic conflict over dependency (as cited in Mészáros, 2009).

Professor Jean Benjamin Stora described a psychosomatic classification model on the basis of his own clinical observations. In this model, he integrated psychic, neural and somatic functioning as well as the patient's family, social and occupational environment. In his attempt, he aimed to have individual diagnoses which could facilitate the epidemiologic researches. Yet, there was no statistical verification for his model in the last 20 years. He especially emphasizes on the fact that psychosomatic patients repress their conflictual emotions and transform them to their soma; which seems to him as a kind of psychic bursting. (Stora, 2004).

1.1.2. The Development of the Psychosomatic Field

1.1.2.1. A Freudian Approach to Psychosomatics

There are different psychoanalytic approaches to understand psychosomatic phenomena. When a Freudian theory is broached, it is important to

mention that Freud did not use the term psychosomatics, but he mentioned the term “body ego” which is the first form of a bodily ego. Instead, Freud proposed that there are two groups of patients in the neurotic dimension for therapeutic assessment; one of them is “actual neurosis” referring to current daily neurosis and the other one is “anxiety neurosis” referring to anxious expectation including hypochondria (as cited in Bronstein, 2011).

In the work of Freud, theoretical foundations are associated with symptoms shown in physical form on the basis of the economy of drives. There are four types of somatic symptoms: the symptoms of hysterical conversion, the somatic symptoms of actual neurosis, hypochondriacal symptoms and constitutional organic illnesses. Conversion hysteria symptoms are memory symbols which present a group of unconscious fantasies converted into the body (Freud, 1955). Notably, there is no anxiety going along with conversion hysteria symptoms. In the perspective of metapsychology, conversion hysteria is indicative of a considerably complete oedipal organization and a permanent strong mechanism of repression (Aisemberg et al., 2010).

In contrast to conversion hysteria, there is no symbolic importance in the somatic symptoms of actual neurosis. The somatic symptoms of actual neurosis include a category of functional disturbances of classic medicine, mostly accompanied by anxiety as well. From the viewpoint of metapsychology, they are the outcomes of the disruption of psychic sexuality. Because of an insufficient mechanism of repression at the core of this disturbance, a suppression mechanism that is more economically costly is used to increase the subject’s libido. Then, the subject’s libido withdraws to the organs instead of being processed on the level of mind. On the grounds of Freudian instinct theory, there is an assumption that there is an erotism of the organs which is shown in the subjective feelings. The function of the organ’s self-preservation will destroy the physiological function of the organs due to the imbalance of two kinds of cathexis in the organ (Freud, 1955).

Hypochondriac symptoms are somatic complaints which are described by pain and a sense of paranoia about having an illness even though there is no organic lesion. According to Freud, narcissistic libido cannot function in the mind, and is then projected onto the body, which denies inadequacy at the level of organic auto-erotisms (Freud, 1955).

Organic illnesses are the main subject of the psychosomatics. From Freud's perspective, this happens in two levels. The first is a narcissistic regression occurring after the illnesses start to appear in the body (Aisemberg et al., 2010). The second level is explained by Freud's two drive theories. Freud's enthusiasm was on observing the relationships between changes in the libidinal economy and the presence of the somatic event (Freud, 1955).

Additionally, Freud underlined that there is a clear paradoxical relationship between the pathological state of mind and the pathological state of body. From Freud's viewpoint, the paradoxical movements between psychic state and body state include the aspects of the subject's masochistic organization (as cited Smadja, 2011).

1.1.2.2. Post-Freudian Approaches to Psychosomatics

There have been a lot of psychoanalysts who were interested in patients with somatic illnesses after Freud's "loyal road" from psyche to soma. These can be divided into two: pre-war theoretical schools and post-war theoretical schools including Generalized Conversion by J.P. Valabrega (1964) and the Psychosomatic School of Paris (Smadja, 2011).

In the pre-war theoretical mainstreams, Ferenczi occupied an important place because of dedicating his works to patients with psychosomatic disorders. According to Ferenczi, neurotic illnesses show themselves through neurosis, psychosis, narcissism, and modifications which can manifest themselves in the presence of organic illnesses (as cited in Aisemberg et al., 2010). According to Groddeck, organic illness is related to the all-powerful id which is able to create a neurotic symptom, a character trait and a somatic illness. In addition, F.

Alexander, who founded the Chicago School, adopted a dualist approach to somatic illnesses. Alexander theorized that organic neurosis, which originated from Freud's concept of actual neurosis, occurs when emotions at the psychic level that are repressed for a long time are converted into the automatic nervous system, resulting in physical disturbance (as cited in Smadja, 2011)

In the post-war theoretical mainstream, current French psychoanalysts started to be interested in patients with somatic complaints. At the beginning of the 1950s, theoretical positions became open to discussion for North-American and European researchers in psychosomatic field. This theoretical debate was fundamentally about the meaning of the somatic symptom. Some support the idea that the somatic symptom has its own meaning while others believe that the somatic symptom is a result of psychic structures in which the principal effect was worsening at a different level of meaning (Smadja, 2011).

According to Valabrega, everyone has a capacity to display conversion. He considered the body as preconsciously processing meaningful memories. So, somatic symptoms include their own meanings. During the therapy, psychoanalysts should help the patient to discover these meanings and elaborate on them. Valabrega left some points unclear and undetermined such as the issue of whether this meaning is an interpretation of the therapist or belongs to the patient's memory. At the end of the 1940s, several psychoanalysts who were included in the Psychosomatic School of Paris emphasized that psychosomatics have an insufficiency of neurotic ego defense mechanisms, and a lack of the symbolic dimension. Marty, who is one of the pioneers of the work in psychosomatics in terms of his novel contributions, mentioned some new clinical concepts such as depression without an object, operational thinking, and the mechanism of projective reduplication as well as the present notion of libidinal psychic regression. In addition, M. de M'Uzan differentiated psychosomatic damage from organic illnesses; he considers it as a regression and a specific modality of mental functioning. He stressed that it is because of the lack of

phantasy life, operational thinking and the mechanism of reduplication led by the deactivation of psychic energy (as cited in Smadja, 2011).

1.1.3. Theoretical Foundations to Understand Psychosomatic Symptoms

According to Bronstein, research has started to be done in order to understand the general psychic mechanism of psychosomatics rather than understanding a peculiar illness by a singular explanation. In current studies, there are two essential approaches to the understanding of psychosomatics: a model of deficit that sees the symptoms to be indicators of a dysfunction in the patient's psychic structure and a model of conflict and phantasy that regards the symptoms to be outcomes of the patient's psychic conflict with hidden unconscious phantasies. In the two models, there are some questions which need to be discussed, such as whether psychosomatic symptoms are caused by biological factors or by a defensive strategy; whether psychosomatic symptoms have unconscious specific meanings or not, what psychosomatic symptoms tell us about functioning at the symbolic level (Bronstein, 2011).

1.1.3.1. Model of Deficit

According to the model of deficit, psychosomatics are generally reluctant to face their emotional problems. Therefore, they become more alienated to their psychic world. There are some different viewpoints about that psychosomatic person becomes a stranger towards their own psychic experience. "Some authors explain this as a lack of a capacity to experience and express conflict via phantasy and psychic representations (even in a primitive way). This theory is inspired by Freud's notion of the 'actual neurosis' where the libidinal energy goes back into the body instead of acquiring psychic representation." (Bronstein, 2011, p.180). Some authors at the Paris School assert similar descriptions, such as having a lack of words for feelings, having difficulty finding appropriate words for feelings, and having a somatic expression rather than becoming aware of a conflictive situation (Bronstein, 2011).

Another important assumption about psychosomatics in the model of deficit is that their ego might be less developed than that of neurotic patients depending on the idea of being unable to phantasize and to unify thoughts and feelings. Additionally, they are characterized by the quality of being operational or mechanical thinkers caused by inadequacy in the System Preconscious. The operational thinking shows itself with no libidinal value and with temporary connection to the words (Bronstein, 2011).

Marty opposed that instinct becomes a drive if it has a connection with internal representations. And, instincts approved psychosomatic economy. Marty's notion in the economic dimension of psychic life is about the idea of poor mentalization and whether it will affect somatizations or not, and whether it might be reversible (as cited in Stora, 2007). Marty also considers life drives as well as death drives, but thinks that only life drives exist autonomously, meaning that death drives only function when life drives fail. It is interpreted as a regression. In Marty's work, life drive can be understood as active as death drive, contrasting with Freudian dualistic approach which assumes the understanding of binding and unbinding life/death drives (as cited in Bronstein, 2011). Differently, it is claimed that the patients with somatic problems have an inability of mentalization compared to other patients with no somatic problems (Fonagy & Moran, 1990).

1.1.3.2. Model of Conflict and Phantasy

In this model, the idea of psychic conflict is an essential point to be able to understand neurotic and psychotic pathologies. There are two different schools including the Kleinian School and the Paris School which look at psychic conflicts from different perspectives. While Klein comes with the different conceptualization about drives, especially death drives by perceiving psychic conflict between death and life drives in a dualist approach, Marty at the Paris School proposes an evolutionist notion which is related to inadequacies in the fixation-regression system (as cited in Smadja, 2005).

According to Klein, the original contents of the unconscious are phantasies, which can be very raw and complex as well as primitive at the infantile level. The phantasies are preverbal experiences and feelings at the level of sensory perceptions at early ages. The phantasies seem a metaphor which can tell more about the subject's mental representations (as cited in Bott-Spillius, 2001). In this case, instead of discussing whether psychosomatics have an ability to phantasize and symbolize, the considerable issue should be whether the therapist is able to reach to the meaning of the metaphors which are raw and primitive that are conveyed through the body and to interpret the unconscious phantasies with the patient.

Another strong assumption is that psychosomatics have a latent psychotic state which is a result of early confusion about how the ego defends itself against psychotic anxieties. Normally, it is expected to attempt to project psychotic anxieties into an external object. If a baby fails, then s/he projects the psychotic anxiety into her/his body as a consequence of withdrawal. The body and body organs, named "psychotic islands", are separated from the psyche. They are unattainable for the rest of the parts of the self (Rosenfeld, 2001).

According to Bion, the early interaction between baby and mother enables the baby to develop a capacity for "alpha function" that conveys emotional impact on "dream-thought". Emotional experiences which are called "beta elements" must be transformed into alpha elements to be able to build "dream-thought". In the case of being unable to process emotional experience into "dream-thought", unprocessed beta elements lead the subject to have a lack of mentalization, which causes the subject to have somatic complaints (as cited in Ferro, 2009). Bion also emphasized that certain somatic symptoms are not comprehensible without going through an archaic state of mind (as cited in Bronstein, 2011).

1.2. THE BIOPSYCHOSOCIAL MODEL

1.2.1. The Biopsychosocial Model of Illnesses

The biopsychosocial approach was developed by George L. Engel in 1977 and was introduced in his article titled "The need for a new medical model" (Engel, 1977). The biopsychosocial approach regards biological, psychological and social aspects and their complicated interactions in a systematic way as significant factors in order to understand health, illness and health care delivery. The biopsychosocial approach gives importance to understand human health and illnesses in their fullest contexts whereas traditional biomedical approaches focus on physiopathology and disease. This approach is also considered as a fundamental contributor to diagnosis, human health and health outcomes and is implied as a biopsychosocial-oriented clinical practice (Borrell-Carrió, Suchman, & Epstein, 2004; Engel, 1977).

1.2.1.1. The Biopsychosocial Model of Gastrointestinal Illnesses

The biopsychosocial model for gastrointestinal illnesses is used to figure out how biologic, physiologic and social subsystems interacted with each other at different levels and how the interactions of these subsystems determines gastrointestinal illnesses (Drossman, 1996). Early childhood experiences have strong effects on psychosocial experiences, physiological functioning, and sensitivity to a pathological condition in later life. It is expected that medical condition is influenced by psychosocial factors which can lead various effects on how to experience symptoms and the clinical outcomes (Drossman, 1998).

When gastrointestinal illnesses are taken into account, this medical condition can be mediated by the interactions of the central nervous system (CNS) and enteric nervous system (ENS) (Drossman, 1998; Mayer, 2016). It is noted that there is a bidirectional communication between brain and gut. Cognition and affect can alter input from sensory sources, somatosensory and viscerosensory sources by way of neural circuits in the central nervous system (CNS), spinal cord, autonomic nervous system (ANS), and enteric nervous system (ENS). This

activity can cause physiological impacts including motility, secretion, and blood flow within GI tract, or can have influence on conscious perception and psychological function (Drossman, 1998).

1.2.1.1.1. The Biopsychosocial Model of Irritable Bowel Syndrome

The biopsychosocial model of illness and diseases helps to understand the reciprocal interactions between mind and body (Engel, 1977). A biopsychosocial conceptualization of the pathogenesis and clinical expression of irritable bowel syndrome (IBS) indicates the relationships between psychosocial and physiological factors, IBS symptoms and clinical outcome (Drossman, 1999a).

As you can see in Figure 1 below, the nature of symptoms of IBS and risk factors leading to IBS can start in early years. A number of studies show that genetic factors including serotonin transporters are significantly associated with functional gastrointestinal disorders (FGDs) (Yeo et al., 2004). The research shows that children who have mothers with IBS had significantly more health care visits more than children who have mothers without IBS (Levy et al., 2001). Based on the findings, it can said that both a genetic factor and social learning can lead to the transmission of IBS symptoms from one generation to another (Tanaka, Kanazawa, Fukudo & Drossman, 2011).

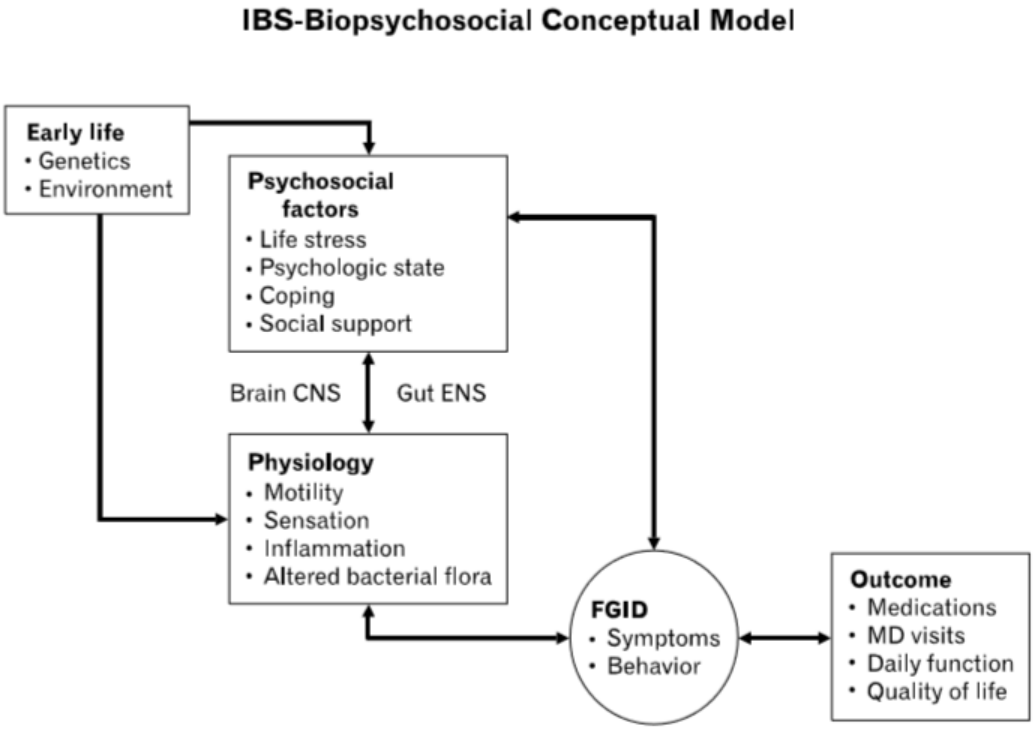

Figure 1. A biopsychosocial conceptualization of the pathogenesis and clinical system; ENS, enteric nervous system; FGID, functional gastrointestinal expression of irritable bowel syndrome (IBS). It shows the relationships between psychosocial and physiological factors, IBS symptoms and clinical outcome. CNS, central nervous disorder. MD, medical doctor. Adapted from Drossman (Tanaka et al., 2011, p.133).

Psychosocial factors including life stress, psychologic state, coping skills and social support have significant impacts on physiological conditions. Childhood experiences impact on psychological states. It was found that adverse experiences in early years have significant relationships with irritable bowel syndrome and gastrointestinal symptom severity (Park et al., 2016). Children's genetics, early learnings, and environments are combined with a unique personality and behaviours. Their stress levels and how to cope with stress are influenced by their personalities, early experiences and psychological states (Tanaka et al., 2011). The studies indicate that chronic stress is a significant risk factor for developing IBS (Mayer, 2000). Chronic stressful events and traumatic

experience can lead both to alterations in physiology and anatomic changes in the body (Tanaka et al., 2011). When considering psychological states and IBS symptoms, it was noted that a number of psychological comorbidities such as depression, anxiety disorders, somatoform disorders and phobic disorders are seen in the patients with IBS (Drossman & Chang, 2003).

IBS patients show physiological abnormalities in gastrointestinal motility, visceral hypersensitivity and their brain-gut axis (Tanaka et al., 2011). Some cells including serotonin in the gut mucosa have more increase in the patients with IBS compared with healthy controls (Dunlop, Jenkins, Neal & Spiller, 2003). It is probable for IBS patients to show lower pain thresholds to balloon distention of the colon than controls (Ness, Metcalf, & Gebhart, 1990).

The physiological abnormalities in IBS patients are firmly correlated with psychological distress and the combined functioning of gastrointestinal intestinal motor, sensory and central nervous system activity that is termed as the brain-gut interactions (Paquette et al., 2003). IBS symptoms can result from dysregulation of central and enteric nervous system causes the dysmotility or visceral sensitivity, which can altered by psychological destress, then it specifies the experience of illness (Drossman, 1999b).

1.3. IRRITABLE BOWEL SYNDROME (IBS)

1.3.1. Definition

Based upon the definition of Rome IV, IBS is a functional bowel disorder including recurring pain in the abdomen and leads to changes in defecation and bowel habits. The term of “functional bowel disorder” is used for the definition of irritable bowel syndrome by aiming to highlight that patients report their symptoms in spite of a lack of physiological abnormalities or any organic diseases (Lacy & Patel, 2017). This disorder is known with some other names such as irritable colon, mucous colitis, spastic colon or spastic colitis, and nervous stomach in society (Yılmaz, Dursun, Ertem, Canoruç, & Turhanoğlu, 2005).

1.3.2. Symptoms

Abdominal bloating or distention which is not differentiated from abdominal pain is found as a primary symptom of a large number of IBS patients (Tibble, Sigthorsson, Foster, Forgacs, & Bjarnason, 2002). Besides abdominal pain, changing bowel habits including "constipation, diarrhea, and a mix of constipation and diarrhea" are seen as common symptoms of irritable bowel syndrome (Lacy & Patel, 2017).

1.3.3. Diagnosis

The Manning and Rome criteria have been used for the diagnosis of IBS so far. The Manning criterion which was the first global IBS diagnosis criteria was offered in 1978 based on the symptoms including abdominal distension, pain relief with defecation, frequent stools with pain, and looser stools with pain, passage of mucus and sensation of incomplete evacuation (Canavan, West, & Card, 2014).

In 1984, Kruis and colleagues described a similar set of symptoms as the Manning criteria used to diagnose IBS: abdominal pain; bloating; and altered bowel function. In their report, there was a strong emphasis on the symptom duration of this disorder by suggesting a two year time duration (Kuis et al., 1984). After their attempts to define IBS, the Rome I criteria for IBS diagnosis was introduced by including the symptom duration as presenting the symptoms "at least 12 weeks out of the preceding 12 months" in 1989 (Tibble et al., 2002). After several years, the Rome I criteria was revised with the addition the term "discomfort" to the definition of IBS and took its name as the Rome II criteria (Thompson et al., 1999).

In 2006, the Rome III criteria was presented with a great change in diagnosing the classification IBS by subtypes (Canavan et al., 2014). Subtypes were classified based upon stool consistency: "IBS-C (constipation), IBS-D (diarrhea), IBS-M (mixed) and IBS-U (unsubtyped)". Another great change was

elimination of abdominal bloating as a primary symptom of IBS in the Rome III criteria (Longstreth et al., 2006).

The last version of Rome criteria which is called as the Rome IV came into use in 2016. Based on the Rome IV criteria, a patient should meet the criteria which were mentioned below to be diagnosed with IBS:

"Recurrent abdominal pain on average at least 1 day a week in the last 3 months associated with two or more of the following:

1. Related to defecation

2. Associated with a change in a frequency of stool

3. Associated with a change in form (consistency) of stool.

Symptoms must have started at least 6 months ago." (Lacy & Patel, 2017).

After the release of Rome IV, "discomfort" disappeared from the definition, as there was no word to express this term in other languages and it has different kinds of meanings in other languages. Based on the reports of IBS patients, it was too difficult to decide if the difference between discomfort and pain should be considered quantitative or qualitative (Spiegel et al., 2010). In Rome IV criteria, the term pain is used for the diagnosis of IBS (Chang, 2017; Drossman, 2016; Lacy & Patel, 2017). In Rome III criteria, the frequency of abdominal pain was 3 days per a month. The frequency of abdominal pain should be one day per week on average to meet the criteria of Rome IV since 2016. This change improves the specificity and sensitivity of the criteria. Also, bloating and distension is considered as common symptoms of IBS based on the current criteria. It helps to figure out the prevalence of patients with IBS and other functional gastrointestinal diseases such as chronic constipation and functional dyspepsia (Chang, 2017; Lacy & Patel, 2017; Tack & Drossman, 2017).

Based on current criteria, it is much clearer to understand with the examples of disordered bowel habits such as "constipation, diarrhea and a mix of

constipation and diarrhea". The last important point about the current criteria is about how to differentiate IBS subtypes. Predominant bowel habits on days with abnormal bowel movements determine the subtype. Patients are classified into four different subtypes based on predominant bowel habits: "IBS-C (constipation), IBS-D (diarrhea), IBS-M (mixed) and IBS-U (unsubtyped)". The identification of IBS subtypes is made based upon the proportion of symptomatic stools (loose/watery vs hard/lumpy) in place of all stools (including normal). It reduces the number of patients with unclassified IBS (Chang, 2017; Drossman, 2016; Lacy & Patel, 2017).

The Bristol stool form scale (BSFS), developed in the 1990s, is used to categorize abdominal bowel movements with seven types of stool ranging from the form of lumpy (Type 1) to the form of watery (Type 7). The authors categorized the stool type 1 and 2 as being related to constipation, the stool type 6 and 7 as being related to diarrhea and marked the stool type 3 and 4 as normal stools. The stool type 5 considered as being associated with diarrhea to some degree (Lewis & Heaton, 1997).

It is difficult to make a diagnosis of IBS because there are limited diagnostic tests to differentiate the symptoms of IBS from the symptoms of other diseases (Mearin & Lacy, 2012). The symptoms of IBS overlap with the symptoms of inflammatory bowel disease, celiac disease, lactose intolerance, fructose intolerance, and microscopic colitis. It is significant to start making a diagnosis of IBS by eliminating any warning signs including "age over 50 without prior colon cancer screening; the presence of overt GI bleeding; nocturnal passage of stools; unintentional weight loss; a family history of inflammatory bowel disease or colorectal cancer; recent changes in bowel habits; and the presence of a palpable abdominal mass or lymphadenopathy" (Lacy et al., 2016, p.10).

After ruling out warning signs, a patient should be asked whether s/he has an abdominal pain as a cardinal symptom of IBS. This abdominal pain might be localized anywhere in abdomen, but mostly localized in the lower abdomen.

There should be a changing bowel syndrome such as “constipation, diarrhea and a mix of constipation and diarrhea as well as abdominal pain” (Kaya & Kaçmaz, 2016). If a patient shows these symptoms of IBS and does not show any warning signs, there is no need for making a diagnostic test for the patient (Begtrup et al., 2013). After obtaining more medical history, having physical examination and minimal laboratory test, if there is still a clinically indication, then some other tests like colonoscopy should be done to decide whether the patient has the symptoms of IBS or not (Kaya & Kaçmaz, 2016).

1.3.4. Prevalence

Irritable bowel syndrome is the most prevalent functional gastrointestinal disorder in developed countries (Lovell & Ford, 2012) and one of the most common diseases seen in primary care settings and speciality gastroenterology inflammatory practices (Mayer, 2008). The prevalence estimates for IBS are significantly different from each other on global level (Canavan et al., 2014). It was noted that the worldwide prevalence of IBS patients is approximately 10-15 percent of the general population with variation by geographic region indicating the lowest in South Asia (7.0%) and the highest in South America (21.0%) (Grundmann & Yoon, 2010; Lovell & Ford, 2012).

The changes in Rome criteria influenced the prevalence rates of IBS in the world. After starting to use of the Rome IV criteria as a diagnosis tool in last year, it was seen that prevalence rate of IBS decreased from 10.8% to 6.1% in the United States (Palsson, van Tilburg, Simren, Sperber, & Whitehead, 2016). It is expected that the prevalence rates of IBS in worldwide will decline based on Rome IV criteria. In Turkey, there was no study investigating the prevalence rate of IBS across the country. Instead, there were a few studies conducted in some cities including İzmir, Sivas, Elazığ and Diyarbakır, which showed that the prevalence rate of IBS ranges from 6.2% to 19.1% (Çelebi et al., 2004; Yılmaz et al., 2005).

IBS is seen in all ages including children and old patients (Tang et al., 2012). The prevalence of IBS shows a slight decline with ages (Houghton et al., 2016); IBS patients' reports indicated that 50% of them had their first symptoms before their age of 35 years. The prevalence is 25% lower in patients who are aged over 50 years than the patients who are younger (Lovell & Ford, 2012).

The patients who are above the age of 50 years also reported that they had milder pain (Tang et al., 2012). In most countries including Turkey, women report the symptoms of IBS more than men. Female to male ratio in IBS prevalence is approximately 2/1 - 3/1 (Houghton et al., 2016). In worldwide estimation the total prevalence of IBS in women is 67% higher than men (Lovell & Ford, 2012). In contrast to other many diseases, IBS is seen in the higher socioeconomic groups (Houghton et al., 2016). The research shows that being raised in the higher socioeconomic environment during childhood has a relation with the higher rates of IBS (Mendall & Kumar, 1998).

1.3.5. Physiopathology

Irritable bowel syndrome has a complex aetiology which has slightly been understood so far. The biopsychosocial framework has been implied to understand the pathogenesis of IBS (Drossman, 1999c). Altered gastrointestinal motility, visceral (related to internal organs) hypersensitivity, post infectious reactivity, brain-gut interactions, alteration in fecal micro flora, bacterial overgrowth, food sensitivity, carbohydrate malabsorption, and intestinal inflammation and serotonin dysregulation have been considered as biological factors in the pathogenesis of IBS (Occhipinti & Smith, 2012; Saha, 2014). Stress (Blanchard, Keefer, Galovski, Taylor & Turner, 2001; Rhee et al., 2009), early childhood abuse (Bessley et al., 2010; Drossman, 1995), having a history of sexual, physical and emotional abuse (Talley et al., 1995) and personality traits (Taymur et al., 2007) as psychosocial factors have also considered in the understanding of pathogenesis of IBS (Drossman, Camilleri, Mayer, & Whitehead, 2002; Fukudo, 2011).

1.3.6. Comorbidities

Some comorbid conditions including fibromyalgia, chronic pelvic pain, chronic back pain, chronic headache, chronic fatigue syndrome, gastro-oesophageal reflux, genito-urinary symptoms, and temporomandibular joint dysfunction occur in nearly half of IBS patients. These co-existing functional conditions are seen twice as often as in IBS patients compared to the general population (Hillilä, Siivola, & Färkkilä, 2007; Kennedy et al., 1998; Whitehead, Palsson, & Jones, 2002).

The comorbid conditions with IBS have their own aetiologies which were insufficiently understood. The symptoms of comorbid conditions have significant overlap with IBS and each other (Aaron & Buchwald, 2001). It was suggested by some researchers that these conditions should be called as a term of 'functional somatic syndromes' (Aggarwal, McBeth, Zakrzewska, Lunt, & Macfarlane, 2006). However, it was claimed that somatic comorbidities which IBS patients experienced are not manifestations of one somatization disorder (Whitehead et al., 2002). It was also reported that the IBS patients who have somatic comorbidities experience their symptoms more severe than they do not have (Hillilä et al., 2007).

Recent studies suggested that IBS has a strong association with psychological problems, especially anxiety, depression and somatization. Almost 60% of IBS patients reported that they have major psychosocial problems (Levy et al., 2006; Przekop et al., 2012). One study found that IBS subtypes have significantly associations with anxiety and depression; IBS-D and IBS-C are comorbid with anxiety and IBS-D is comorbid with depression (Fond et al., 2014).

1.3.7. Treatment

The physicians first should have a detailed medical history about the symptoms of IBS before considering treatment options. If there is no alarming sign, the patient is expected to have a diagnosis with IBS and it is not suggested to

do routine diagnostic testing (Saha, 2014). The physician must be aware that having a strong relationship with the patient is a base for effective treatment Occhipinti & Smith, 2012).

IBS has a complex and diverse presentation and it makes treatment difficult. A number of treatment options for IBS include non-pharmacological therapies such as mind-body therapies, cognitive-behavioral therapy, hypnotherapy and relaxation techniques, doing exercise and yoga, diet modification, avoiding to take macronutrients (fat, sugar, and sugar alcohols), intake of fiber, decreasing intake of lactose if there is lactose intolerance, and pharmacotherapy (taking some medicines which focus on the molecular level like serotonin receptor agonists and antagonists) and alternative therapies (herbal preparations) (Saha, 2014).

1.3.8. Prognoses

IBS is a chronic disease which has no known effective treatment that works for every individual. There is evidence that in a small percentage of older IBS patients' symptoms resolve with time. A proportion of IBS patients shows 'shifting symptoms', which means they have different IBS symptoms at different times (Canavan et al., 2014).

1.4. STRESS, TRAUMA, EMOTIONS AND IBS

1.4.1. Stress and Trauma

In 1936, the concept of stress, which was first used by Hans Selye, was described as "the nonspecific response of the body to any demand made upon it" (Selye, 1973, p.692). He also defined the word "stressor" to mean a stimulus that causes stress as a response. Based on his nonjudgmental definition, stress is solely determined by the degree of adaptation demanded. Whether the stress is caused by pleasant or unpleasant situations does not change the nature of the stress. Though according to Selye, complete freedom from stress is impossible to achieve, he

suggests that people can benefit from stress by understanding its mechanism better instead of avoiding stress (Selye, 1973).

The definition of stress has shifted over the years to “any acute threat to the homeostasis of an organism, which may be real or perceived, and elicited by internal or external events” (P. Konturek, Brzozowski, & S. Konturek, 2011, p.591). Stress can be acute or chronic, and can range from daily life difficulties to life-threatening situations (McEwen, 2006), and triggers “fight or flight” responses (Chang, 2011). Chronic stress causes an increased demand on physiologic systems (Outhoff, 2016).

The Diagnostic and Statistical Manual of Mental Disorders (5th ed.; DSM–5; American Psychiatric Association, 2013) defines trauma as “exposure to actual or threatened death, serious injury, or sexual violence in one (or more) of the following ways: directly experiencing the traumatic event(s); witnessing, in person, the traumatic event(s) as it occurred to others; learning that the traumatic event(s) occurred to a close family member or close friend (in case of actual or threatened death of a family member or friend, the event(s) must have been violent or accidental); or experiencing repeated or extreme exposure to aversive details of the traumatic event(s)” (p. 271).

In other developed definitions of trauma, trauma is considered as being caused by an event, series of events or sets of circumstances that is overwhelmingly experienced by an individual, and that has permanent negative effects on the individual’s mental, physical, emotional and social functioning (Breslau, 2002; Substance Abuse and Mental Health Services Administration [SAMHSA], 2014). If an experience is sudden, unexpected and outside the usual range disturbs the individual’s frame of references and other psychological needs and above the individual’s perceived abilities to meet its demands, this experience is considered as traumatic (McCann & Pearlman, 1990).

On the basis of the common sense model of the relationship between stress and trauma, trauma can be differentiated as from stress being defined as an

extreme form of stress (Christopher, 2004; Perry, 1999) and an event that is sudden, unexpected or non-normative. (Breslau, 2002; Christopher, 2004; McCann & Pearlman, 1990) Both stressful and traumatic event exceed the individuals perceived abilities to meet its demands.

1.4.2. Stress and IBS

Multiple stressors play a significant role in the development of IBS. Stress which is perceived as a threat to the homeostasis of the organism makes certain of the survival of organism by triggering adaptive responses (Mayer et al., 2001). A number of studies showed strong evidences for the considerable role of stress in the psychopathology (Patacchioli, Angelucci, Dell'Erba, Monnazzi, & Leri, 2001; Chang, 2011) and the development of IBS symptoms (Mayer, 2000; Saha, 2014). Different types of stressors in possible roles are explained in a model which is shown in Figure 2.

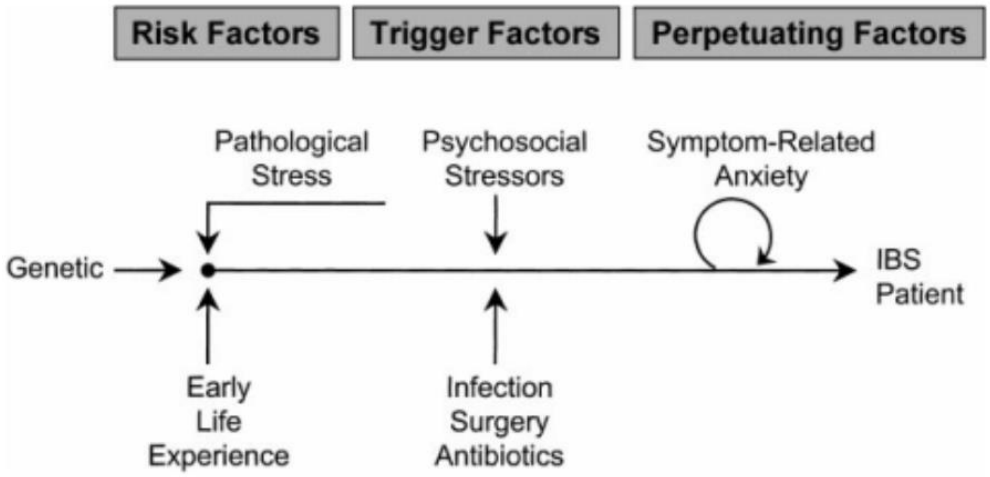

Figure 2. "Role of stress in development and modulation of irritable bowel syndrome (IBS) symptoms. Different types of stressors may play a role in the permanent biasing of stress responsiveness, in transient activation of the stress response, and in the persistence of symptoms" (Mayer et al., 2001, p.520).

As you can see in Figure 3, risk factors for IBS include genetics, pathological stress and early life experiences while trigger factors include

psychological and physiological stressors such as infection, surgery and antibiotics. Psychological or physical stressors can also result in exacerbating the complaints of IBS (Mayer, Labus, Tillisch, Cole & Baldi, 2015).

Even though the impact of stress on gastrointestinal functions is accepted universally, IBS patients show a higher degree in reactivity to stress than healthy individuals with regard to gastrointestinal (GI) mobility, gut transit, visceral perception, intestinal secretion and permeability (Camilleri et al., 2008; Chang, 2011; Mayer et al., 2015; Mönnikes et al., 2001; Park et al., 2006).

In addition, a variety of stress-induced alterations occurred in the autonomic nervous system (ANS) which is composed of three branches: the sympathetic and parasympathetic branches of the ANS which mediate brain– gut communication, and a third ANS branch which modulates brain-gut communication between the other two branches and is called the enteric nervous system. The ANS also modulates GI motility, secretion, and immune function (Camilleri et al., 2008). The stress-induced changes in ANS output and interactions can be involved in IBS (Chang, 2011; Mayer et al., 2015). Studies have presented the dysregulations in ANS exist among IBS patients (Tillisch et al., 2005).The results of studies showed that IBS patients have a greater decrease in parasympathetic nervous system activity while a greater increase in sympathetic nervous system activity compared to control groups (Burr, Heitkemper, Jarrett, & Cain 2000; Heitkemper et al., 2001).

Continuous stress or very high degree of stress can result in dysregulation of parts of the brain–gut–microbiota axis, which can cause or aggravate symptoms of IBS (Outhoff, 2016). Also, there are dysregulations occurred in the hypothalamic-pituitary-adrenal (HPA) axis because of stress. Studies have noted that IBS patients showed increased basal cortisol levels (Chang et al., 2009) and enhanced responses to physical stimulators (Videlock et al., 2009) or stressors and hormone stimulation (Outhoff, 2016). The exaggerated brain inputs in HPA axis in IBS patients negatively affect intestinal motility, secretion, permeability,

immune function and gut microbiota composition (Chang, 2011; Mayer et al., 2015).

All interactions between the brain–gut–microbiota axis, through the enteric nervous system, immune and microbiota signalling and feedback to the brain, result in continuing the stress response cycle (Outhoff, 2016).

1.4.3. Trauma and IBS

Under the conditions of chronic stress which can occur in response to exposure to traumatic events, three major neurobiological nervous systems involving the sympathetic nervous system (SNS), the serotonin system, and the limbic–hypothalamic–pituitary– adrenal (LHPA) axis, which influence stress reactions, arousal, emotional regulation, cognitive development, and physical development, can be affected. All neurological systems are connected to each other; the dysregulation in one system can result in dysfunctions in others. Chronic stress has an impact on immune system as well (Watts-English, Fortson, Gibler, Hooper, & De Bellis, 2006).

Many studies show that traumatic stress has permanent effects on the amygdala which is responsible for emotional processing, the hippocampus which is responsible for processing sensory information into memories and "turning-off" the body's stress response and the prefrontal cortex which is in charge of executive functioning, working memory, and impulse control. The individuals with post-traumatic stress disorder (PTSD) tend to have increased amygdala function, smaller hippocampal and anterior cingulate volumes and smaller prefrontal cortex than individuals who do not have PTSD (Bremner, 2006; Koenigs & Grafman, 2009; Shin, Rauch, & Pitman, 2006).

There are also strong associations with having traumatic experiences and showing gastrointestinal disorders including IBS. Adverse early life experiences and trauma including any form of abuse, loss of primary caregiver, neglect plays a fundamental role in the susceptibility of individual to develop gastrointestinal

disorders in later life. Experiencing traumatic life events are also significant risk factors to develop gastrointestinal disorders in later life (Mayer et al., 2001).

The study showed that patients with functional gastrointestinal diagnoses tend to have more severe abuse histories than other groups. The pathological features of gastrointestinal disorders show that there is a stress-mediated brain-gut dysfunction, altered stress-induced immune function and impaired ability of the central nervous system to downregulate incoming visceral or somatic afferent signals (Douglas & Drossman, 2011). Traumatic events including both early life stress and severe life-threating stress lead to persistent and irreversible enhancement of central stress circuits and then susceptibility to develop functional disorders in later life (Mayer et al., 2001).

A number of studies indicate that the histories of IBS patients contain more verbal, physical and sexual abuse than those of individuals without IBS, including individuals with organic gastrointestinal conditions (Chitkara, van Tilburg, Blois-Martin, & Whitehead 2008; Nelson, Baldwin, & Taylor, 2012; Ross, 2005; Talley et al., 1995). A study with 294 IBS patients and a control group consisting of 435 healthy individuals shows a relation between IBS and adverse types of early events (Bradford et al., 2012). In another study which includes 233 IBS patients and a control group consisting of 353 healthy individuals, IBS patients show higher total scores in early life trauma, general trauma including emotional, physical and sexual abuse events under the age of 18 (Videlock, Mayer, Naliboff & Chang, 2010). Halland et al. (2014) conducted a family based case–control study of IBS cases and their relatives to see the frequency of childhood trauma among IBS cases and controls as well as their relatives and to assess childhood trauma among IBS cases with affected relatives (familial IBS). The results showed that IBS was associated with childhood traumas which frequently occur before the onset of IBS symptoms. The results also showed that there was no statistical difference between IBS relatives and control groups in terms of lifetime trauma histories.

IBS has strong associations with traumatic experiences in later life as well as childhood traumatic experiences. The study was conducted to evaluate the association between major traumas and irritable bowel syndrome among women veterans accessing the healthcare (White et al., 2010). The results indicate that lifetime history of a broad range of traumas is independently associated with an increased IBS risk and sexual assault was most frequently reported by woman veterans. In another research, women with IBS showed significantly higher scores on emotional abuse, self-blame, and self-silencing compared to women diagnosed with inflammatory bowel disease. Also, emotional abuse was significantly higher in IBS patients than other patients with inflammatory bowel disease beyond the differences accounted for by physical and/or sexual abuse history (Ali et al., 2000).

1.4.4. Emotions and IBS

In general, the term of emotion can be described as any conscious experience which is characterized by intense mental activity, pleasure and displeasure (Cabanac, 2002; Damasio, 1998). From a cognitive perspective, emotions are conscious feelings that define as subjective representations of emotions about self and objects in the environment. Based on a biological perspective, emotions involve changes in body systems including autonomic nervous system, neurotransmitter, neuroactive peptide systems, musculoskeletal system, endocrine system, which prepare and adapt an organism to behave in specific ways (Turner, 2000).

In broad terms, emotional patterns can be considered as individual differences in emotional reactivity, processing and regulation (Muscatello, Bruno, Mento, Pandolfo, & Zoccali, 2016). There are two large dimensions of emotional patterns: positive affect (PA) or pleasantness which is described by the frequency of positive feelings and mood states involving “interest, enthusiasm, happiness, motivation, high energy levels, mental alertness” (Clark, Watson, & Leeka, 1989; Watson & Clark, 1984) and negative affect (NA) or unpleasantness which is

described by consistently tending to experience negative emotions like “fear, sadness, guilt, disgust, anger, depression, feelings of subjective distress, and lack of energy”. High level of negative affect is related to having low energy, poor tolerance to stressors, low self-esteem, introspective tendencies, negative thoughts, pessimism, significant subjective dissatisfaction (Suls, 2001). Meanwhile, high level of positive affect is associated with high energy, activity and concentration, yet high level of positive affect is in relation with poor energy and fatigue (Watson & Clark, 1984).

In contrast to the assumption that negative emotions are bad and positive emotions are good, from evolutionary perspective negative emotions developed to serve the survival of the organism. For instance, anger and fear as negative emotions trigger “fight and flight” responses to attack or escape from dangerous situations (Levenson, 1999). Besides, positive emotions urge nonspecific behaviours such as approach behaviour and a relative lack of autonomic reactivity (Levenson, 1999) and prompt a wider scope of actions such as exploring, playing, approaching, and building vital physical, cognitive, and social resources and show more prosocial and affiliative behaviours (Ashby, Isen, & Turken, 1999).

It is still debated if the consistent experience of negative emotions can have an effect on the development of illness, or trigger and exacerbate disease episodes (Muscatello et al., 2016). Based on a developmental framework, patterns of emotional function which occurred in childhood are nearly sustained in adulthood; therefore emotional patterns of childhood can be predictors of mental and physical health in later life (Repetti, Taylor, & Seeman., 2002).

Positive emotions are closely related to better physical and mental health (Lyubomirsky, King, & Diener, 2005) and lower mortality in both older groups and chronically ill groups (Moskowitz, 2003) whereas negative emotions constitute cardiovascular reactivity, and are mostly related to heart diseases (Kent & Shapiro, 2009).

Research which has examined whether negative emotions are associated with the pathophysiological components of IBS have conceived anger, anxiety and depression (Alaqeel, Alowaimer, Alonezan, Almegbel, & Alaujan, 2017; Fond et al., 2014; Zoccali et al., 2006). In one study which was conducted with 60 subjects with IBS and 45 controls showed that higher level of anger are seen in participants who have IBS compared to control group (Stanculete, Pojoga, & Dumitraşcu, 2014).

In another study, there were 10192 participants who have IBS responded a triple questionnaire which include psychological and medical items that help to measure psychoemotional features in IBS. The results of this study presented that anxiety and depression were unsurprisingly associated with IBS, especially IBS patients have the maximum scores in fear and pessimism which are known as anxiety and depression and tension has the strongest relationship with IBS. Besides, the results indicated IBS has the strongest associations with the inclination to endure unacceptable situations, preoccupation with health, and susceptibility, and then by fear of failure and sense of demanding profession (Dragoş, Ionescu, Ojug, Tanasescu, & Davila, 2012).

In a recent study which was conducted with 98 IBS patients in Iran, the results indicated that anxiety, stress, and depression are positively and significantly related with the emotional schemas including being uncontrollable, rumination, and feeling of guilt and blame while they are negatively and significantly associated with the emotional schemas involving emotional self-awareness, being comprehensible, compromise, acceptance of emotions, seeking confirmation, and higher values (Erfan, Noorbala, Afshar, & Adibi, 2017).

1.4.4.1. Understanding and Expressing Emotions

According to Selye, actively inhibiting one's feelings, thoughts and behaviours over time lead to cumulative stress on the body and it increases the probability of developing stress-induced disorders (Selye, 1976). Based on Alexander's psychosomatic concept, a psychosomatic disorder arises owing to

unloading emotions through the autonomic nervous system. He also claimed that chronic inhibition of sadness and crying result in respiratory disorders such as asthma, chronic inhibition of anger was related to cardiovascular disorders such as hypertension and the chronic inhibition of affiliative tendencies was linked to gastrointestinal disorders, such as ulcers (Alexander, 1950).

In the psychosomatic literature, there is a personality trait called alexithymia which involves "an inability to identify, describe and recognize subjective emotions, poor imaginative thought and introspection, a concrete and externally oriented cognitive style". On the basis of a theory, the person with alexithymia failures to regulate negative emotions, then this leads to alterations in autonomic, endocrine, and immune activity, which creates leading circumstances to the development of somatic disease (Taylor, Bagby, & Parker, 1997).

1.5. PERSONALITY AND IBS

1.5.1. The Findings on the Personality Features of IBS

In previous studies on personality features in IBS patients, the Eysenk Personality Inventory (EPI) was used to measure two opposite dimensions of personality which involve the polarity of "extraversion-introversion" and "neuroticism-stability" (Loo, 1979). In one study, the level of neuroticism was tested by the EPI among IBS patients. The findings indicated the patients who had predominantly diarrhea were more neurotic and anxious compared to general medical patients (Esler & Goulston, 1973). In another study, the results also showed that IBS patients report significantly higher level in neuroticism and lower level in extraversion than the normal population, yet significantly less neurotic and more extravert than psychiatric outpatients (Palmer, Stonehill, Crisp, Waller, & Misiewicz, 1974).

The Five Factor Model (FFM) has five dimensions which include "neuroticism, extraversion, and openness to experience, agreeableness, and conscientiousness". Neuroticism is explained "tendency toward negative emotions (anxiety, hostility, depression) with high reactivity to physiological changes,

emotional instability, vulnerability to stress, and an inclination toward impulsive behaviours". Extraversion is described as "attitudes to experience positive emotions, warmth, excitement seeking, and activity". Openness to experience means that "tendencies toward imagination and fantasy, aesthetics, creativity, ideas and values, and thought flexibility". Agreeableness is considered as "pro-social, altruistic orientation towards others, trust, straightforwardness, and tender-mindedness". As a last dimension of FFM conscientiousness involve "competence, order, self-discipline, and achievement striving" (Muscatello et al., 2016, p. 6405). Based on this model, NEO Five-Factor Inventory was developed to assess personality factors (Muscatello et al., 2016).

Some studies aimed to describe the personality traits of IBS patients by using the NEO Five-Factor Inventory (NEO-FFI). In one study which was conducted in 56 IBS patients and 55 controls, the results indicated that IBS patients had significantly higher scores in neuroticism and concealed aggression compared to the controls (Tanum & Malt, 2001). Another study aimed to describe the personality features of IBS in terms of IBS subtypes via using the NEO-FFI. The findings presented that constipation dominant-IBS patients had significantly higher scores in conscientiousness and neuroticism than diarrhea dominant-IBS and altering type-IBS (Farham et al., 2007).

A research was performed in 160 IBS patients by using the NEO-FFI to measure psychological factors. The results of this research indicated IBS patients had a significantly higher level of neuroticism and conscientiousness and lower level of openness and agreeableness compared to the general population (Farnam, Somi, Sarami, & Farhang, 2008).

One study was conducted in 86 patients with IBS, 34 patients with ulcerative colitis, 30 patients with Crohn's disease, and 122 healthy individuals. The results of this study showed that IBS patients had a higher level of neuroticism and a lower level of agreeableness as personality traits compared to patients with inflammatory bowel disease. Furthermore, IBS patients had a higher

level of neuroticism compared to health individuals. Based on the findings, IBS patients described themselves less aggregable compared to patients with inflammatory bowel disease (Tkalcic et al., 2009).

The Temperament and Character Inventory (TCI-R) is a 240-item self-administered questionnaire designed to measure 4 temperaments, Novelty Seeking (NS), Harm Avoidance (HA), Reward Dependence (RD), and Persistence (PS), and three characters, Self-directedness (SD), Cooperativeness (CO), and Self-transcendence (ST). In current literature, there are limited researches which use TCI-R to describe the temperament and character of IBS (Taymur et al., 2007).

The research which was performed in 34 IBS patients and 32 healthy individuals used to measure personality traits through the Temperament and Character Inventory (TCI). The findings of this research indicated that IBD patients had a significantly higher score in "harm-avoidance" subscale and in "self-transcendence" in subscale (Taymur et al., 2007). Based on these results, it can be said that IBS patients have a heritable bias in the inhibition of behaviours such as pessimistic worry and passive dependent behaviours and show self-maturity. In one current study, 57 IBS patients and 57 healthy individuals were involved as participants. The results of this study indicated IBS group had lower scores in persistence which is one of the temperament traits and in self-directedness and cooperativeness which are two of the character traits compared to the control group (Karacaer, Yazici, Saykan, & Erol, 2015). It can be said that IBS patient might have difficulties to tolerate frustration, to control, regulate and adopt their behaviour in concert with personal goals and values and show less self-esteem. They also might have difficulties to be acceptable by others.

In a cross-sectional study which was conducted in 60 IBS patients and 55 healthy individual and aimed to measure personality characteristics of IBS by using Minnesota II Multiphasic Personality Inventory (MMPI-2), the results indicated that IBS patients showed the highest scores on the hypochondriasis scale by meaning their anxiety about their health issues and psychoasthenia scale by

showing their high level of anxiety and reflecting their obsessive compulsive disorder. Also, IBS patients had a higher score on the scales of lie, infrequency, depression and hysteria. Furthermore, male IBS patients had higher scores for psychopathic-deviate, paranoia and social introversion scales compared to the males in the control group and females. Female IBS patients had lower scores on the social introversion scale compared to the females in the control group (Mousavinasab, Gorganinezhad-Moshiri, Saberifirouzi, Dehbozorgi, & Mehrabani, 2007).

In a study including a large number of IBS patients and aimed to describe psychoemotional features of IBS, the results showed that IBS patients have some personality features such as accepting a subordinate position which might be related to being preoccupied with authority factors, having a contemplative nature, preoccupation with health issues, having a unsociable and precautious nature (Dragoş et al., 2012).

1.5.2. The Affective Neuroscience Personality Scale (ANPS)

Based on Affective Neuroscience research, the Affective Neuroscience Personality Scale (ANPS) was created to measure human behavioural traits associated with affective systems which have been described in the archaic brain's reptilian and old mammalian layers (Davis, Panksepp, & Normansell, 2003; Panksepp, 1998). There are six systems which include "*play, seek, care, fear, anger* and *sadness* systems" which are considered as archaic affective states. The seventh affective system is called *spirituality,* which is a higher function of the brain compared to other six affective functions.

Based on the ANPS, there are six basic emotions which are "*play, seek, care, fear, anger* and *sadness"* and "*spirituality"* was considered as one of the highest human emotions. For three major positive affect subscales *playfulness* was conceptualized as "having fun vs. being serious, playing games with physical contact, humour, and laughter", *seeking* was described as "feeling curious, feeling like exploring, striving for solutions to problems and puzzles, positively

anticipating new experiences" and *caring* was defined as "nurturing, being drawn to young children and pets, feeling soft-hearted toward animals and people in need, feeling affection for and liking to care for others, as well as liking to be needed by others" (Davis et al., 2003, p.59). For three major negative affect subscales, *fear* was conceptualized as "having feelings of anxiety, feeling tense, worrying, struggling with decisions, ruminating about past decisions and statements", anger was described as "feeling hot-headed, being easily irritated and frustrated, experiencing frustration leading to anger, expressing anger verbally or physically" and sadness was defined as "feeling lonely, crying frequently, thinking about loved ones and past relationships, and feeling distress when not with loved ones" (Davis et al., 2003, p.60). *Spirituality* was added as one of the highest human emotion by being described as "feeling "connected" to humanity and creation as a whole, feeling a sense of "oneness" with creation, striving for inner peace and harmony, relying on spiritual principles, and searching for meaning in life" (Davis et al., 2003, p.60).

Each of six subscales of ANPS had a significant correlation with at least one of the (Five Factor Model) scales. There are significant relationships between personality dimensions and personal affective dimensions. *Playfulness* has a strong positive correlation with Extraversion. *Care* has a strong positive correlation with Agreeableness. *Anger* is negatively correlated with Agreeableness. *Seek* has a strong positive association with Openness to Experience. All three emotions including *fear*, *anger*, and *sadness* are negatively associated with Emotional Stability and are positively correlated with Neuroticism (Wildschut, Sedikides, Arndt, & Routledge, 2006) and are weakly correlated with Conscientiousness (Davis et al., 2003). Besides, when the ANPS dimensions are compared to Cloninger's TCI (Temperament and Character Inventory), the ANPS *seek* has a theoretical correspondence with Cloninger's Novelty Seeking dimension in terms of both depending on dopamine and being associated with appetitive motivation (Cloninger, Svrakic, & Przybeck, 1993; Davis & Panksepp, 2011).

1.6. CURRENT STUDY

1.6.1. Aim of Study

The primary aim of this study is to investigate the relationships between general traumatic life experiences, affective personality features, understanding and expressing emotions and irritable bowel syndrome. The biopsychosocial model of illness and disease described by Engel (1977) constitutes the theoretical foundation for this study. This model considers all possible pathways including psychosocial factors, physiological symptoms and behaviours, and clinical outcomes and their interactions in determining the causes of an illness (Mayer et al., 2001). Being exposed to sustained extreme form of stress including traumatic events in early ages and even later life has permanent adverse influences on the individual's mental and physical functioning as well as emotional and social development (Breslau, 2002; SAMHSA, 2014; Mayer et al., 2015). Experiencing chronic stress or continuous traumatic events are perceived as a threat for the homeostasis of organism, which leads to stress-induced alterations in autonomic nervous system, especially brain-gut communications. The alterations in the brain-gut communications can result in some gastrointestinal diseases such as irritable bowel syndrome (Mayer, 2000; Outhoff, 2016; Saha, 2014). Although a comprehensive literature suggests that there is a strong relationship between certain types of childhood trauma and IBS, few studies address the importance of general traumatic life experiences after twelve years of age in developing IBS. This study addresses the shortcoming of literature by focusing on all ages in which an individual is exposed to a traumatic event, and by distinguishing between different types of traumatic events and to what degree the individuals are influenced by these events, in order to understand the underlying mechanism by which IBS develops.

In literature, there are some studies which pointed out that personality factors are directly related to the onset and development of illness whereas few studies claim that there is a less direct relationship between personality and

illness. A group of researchers support the idea that personality plays a role as a buffer; personality characteristics play important role in a person's vulnerability or resistance to illnesses (Smith & Williams, 1992). Meanwhile, one current study indicates that there is a strong association between specific personality profiles and developing psychosomatic complaints (Conden, Leppert, Ekselius, & Aslund, 2013). There are a few studies which were conducted on IBS patients to investigate their personality profiles and their main focus was on neuroticism. These previous studies came up with the more general personality constructs of IBS patients by using FFM and TCI measurement tools. In Turkey, researchers used Cloninger's Temperament and Character Inventory (TCI) and the Five Factor Model (FFM) to investigate the personality traits of IBS patients, but these tools were not sufficient to figure out the underlying primitive affects experienced by IBS patients, because these tools are not proposed to explain the personality as a system that is rooted in basic emotional systems (Davis et al., 2003). This study is the first one to investigate primary affective constructs of IBS patients by using ANPS as a measurement tool since there is no research on basic emotional systems that are associated with irritable bowel syndrome in literature. This study also aims to elucidate more primal underlying systems contributing to the affective components of personality of IBS patients. Using this measure will enable us to understand which specific affects are more influential for IBS patients.

Traumatic life events, active emotional systems, and the ability to understand and express emotions are the main factors related to irritable bowel syndrome. Research has pointed out a predominant role of trauma and some personality features (e.g. neuroticism) in certain medical illnesses. However, there is not much research on the role of basic emotional systems in chronic illnesses. Understanding the basic emotional systems that are active in IBS patients can be important to better understand how stressful life events are experienced and why their effects cannot be processed, and manifest themselves in bodily complaints. This study aims to better understand these variables,

especially the negative emotions that are more prominent in IBS patients (fear or anger) and the ability to express positive emotions and emotions such as playfulness, seeking, etc. to facilitate emotional discharge. An in-depth understanding of these interactions would be expected to improve our clinical understanding of the underlying mechanisms associated with IBS and inform psychotherapeutic interventions for treating IBS.

1.6.2. Hypotheses

Hypothesis 1: General traumatic life experiences are more frequent in IBS patients compared to people without IBS. **a)** Traumatic experiences in early years are more frequent in IBS patients compared to people without IBS. This study will also explore which trauma categories are more associated with IBS.

Hypothesis 2: Three positive basic emotion factors including playfulness, care and seeking are present to a lesser degree in IBS patients than in people without IBS.

Hypothesis 3: Three negative basic emotion factors including fear, anger, and sadness are present in a higher degree in IBS patients than in people without IBS. **a)** Fear will be seen more frequent than anger in IBS patients.

Hypothesis 4: Difficulties in understanding and expressing emotions are more frequent in IBS patients compared to people without IBS.

METHOD

2.1. PARTICIPANTS

The samples consisted of individuals who (a) are diagnosed with having irritable bowel syndrome (the irritable bowel syndrome group) and (b) are not diagnosed with having irritable bowel syndrome (the control group). The participants were contacted via private hospitals, online support platforms; a private company in Istanbul. Additional participants were gathered through snowballing method.

2.1.1. IBS Group

The IBS group was gathered through convenience sampling. In the IBS group, 48 of the participants were contacted via online IBS support platforms, 12 of the participants were reached via the gastroenterologists at the private hospitals, and 11 out of the participants were contacted via personal contacts (snowballing). The participants fulfilled the following inclusion criteria: a) to be older than 18 years old, b) to be diagnosed with irritable bowel syndrome, c) to be in the treatment process or in the check-up process. The final number of IBS group consisted of 71 participants with ages ranging from 20 to 60 (M= 38.07, SD= 10.532). 50 female (70.4%) and 21 male (29.6%) participants were recruited in this study. Most of participants had high level of education; 45 (63.4%). The education levels of the participants are shown in Table 1 below.

Table 1

Education Levels of the IBS Group (N = 71)

	N	%
Primary school	2	2.8
Secondary school	4	5.6
High school	8	11.3
Vocational high school	3	4.2
University	45	63.4
Master'/ Doctor's degree	9	12.7

They had a very low, low, middle, high or a very high level of socioeconomic status; the ranges of monthly salary of the participants are shown in Table 2 below.

Table 2

Monthly Income (TRY) of the IBS Group (N = 71)

	N	*%*
Below 1.000 TRY	5	7.0
Between 1.000 TRY and 2.000 TRY	10	14.1
Between 2.000 TRY and 4.000 TRY	28	39.4
Between 4.000 TRY and 7.000 TRY	21	29.6
Between 7.000 TRY and 10.000 TRY	2	2.8
Above 10.000 TRY	4	5.6
Missing	1	1.4

In addition to basic demographic information the IBS patients were also asked about the duration of their illness and if an event triggered their illness. When they were asked about the triggering events of IBS, 28 (39.4%) of the participants reported that they experienced no event which might trigger the symptoms of IBS, 27 (38.0%) of the participants reported that they experienced some events which might trigger the symptoms of IBS and 16 (22.5%) of the participants reported that they did not remember any event which might trigger the symptoms of IBS. The triggering events which they reported ranged from experiencing physical abuse to life changes such as a move. These included experiencing extreme stress in the workplaces, earthquake, psychological trauma, engagement, moving to another city or country, losing the parents, car accident, having surgeries, using antibiotics, starting to live in the dormitory, a bus travel, experiencing exam anxiety, experiencing physical abuse, relational problems, using painkillers, feeling fearful, malnutrition and having fibromyalgia.

In addition, they were asked about whether or not they had any change in their lives when they were diagnosed with IBS; 28 (39.4%) of the participants reported that they experienced no change in their lives, 26 (36.6%) of the participants reported that they experienced some changes in their lives and 17 (23.9%) of the participants reported that they did not remember any change which they might experience shown in Table 3 below. The life changes which they reported included experiencing stressful period, having psychological problems, moving to another city or country, marriage, having exams, being retired, being hit by the policemen, starting a new job, doing military service, setting up a new business, staying at the dormitory and having more responsibilities. The duration of the illness varied between a few months to life long as you can see in Table 3 below.

Table 3

Information About the IBS Patients (N = 71)

	IBS Group *(N = 71)*	
	N	*%*
Diagnosis of IBS		
	71	100
Triggering Events of IBS		
No	28	39.4
Yes	27	38.0
I do not remember	16	22.5
Life Changes of the Patients		
No	28	39.4
Yes	26	36.6
I do not remember	17	23.9
Duration of IBS		
Less than 1 year	4	5.6
Between 1 year and 2 years	12	16.9
Between 2 and 5 years	10	14.1
More than 5 years	38	53.5
From my birth	6	8.5
Missing	1	1.4

2.1.2. Control Group

The control group had a total of 86 participants; 34 out of the participants were employees of a private company and they were contacted via the human

resources of their company. 10 of the participants were recruited via online social networks, and 42 out of the participants were contacted through personal contacts via snowballing. The inclusion criteria were: a) to be older than 18 years old, b) not to be diagnosed with irritable bowel syndrome or any other gastrointestinal chronic illness. Total number of participants in control group was 86 at the beginning of the study. However the control group's years of education on the whole were higher than the IBS group. In order to equalize the two groups in terms of education level, 15 of the participants from the control group with high education levels were chosen randomly and removed. 9 male and 4 female participants who had a master's or doctor's degree and 2 male participants who had graduated from an undergraduate program were removed from the control group. The total number of participants in the study was 142. The final number of the control group consisted of 71 participants with ages ranging from 21 to 58 (*M*= 35.38, *SD*= 8.210). It composed of 37 female (52.1%) and 34 male (47.9%) participants.

Table 4

Education Levels of the Control Group (N = 71)

	N	%
Primary school	—	—
Secondary school	—	—
High school	2	2.8
Vocational high school	6	8.5
University	54	76.1
Master'/ Doctor's degree	9	12.7

Table 5 summarizes their level of monthly income below.

Table 5

Monthly Income (TRY) of the Control Group (N = 71)

	N	*%*
Below 1.000 TRY	2	2.8
Between 1.000 TRY and 2.000 TRY	1	1.4
Between 2.000 TRY and 4.000 TRY	34	47.9
Between 4.000 TRY and 7.000 TRY	28	39.4
Between 7.000 TRY and 10.000 TRY	2	2.8
Above 10.000 TRY	2	2.8
Missing	2	2.8

2.1.3. Group Differences

The IBS group was significantly different than the control group in terms of demographic characteristics involving gender, employment, health problems, health complaints, IBS in family, psychological problems, psychiatric diagnosis, taking psychiatric medications and psychological support. The IBS group had more female participants than the control group. The IBS group had more people who were unemployed compared to the control group. As expected, the IBS group reported to have more health problems and complaints as well as psychological problems than the control group. They also reported to have more family members diagnosed with IBS than the control group. Besides, they had more psychiatric diagnosis and were taking psychiatric medications compared to the control group. They reported to have more psychological support from professionals including psychiatrist, therapist and counsellor than the control group.

The Control group had more people who had attended university and the IBS group had a few people who had less than high school education but the two groups did not have a significant difference in terms of the mean total years of education.

The two groups were not significantly different in terms of demographic characteristics involving age, marital status, and monthly income (See in Table 2).

Table 6

Demographic Characteristics of the Participants of Study (N = 142)

	IBS Group (N = 71)				Control Group *(N = 71)*			
	N	*%*	*M*	*SD*	*N*	*%*	*M*	*SD*
Age								
	69		38.7	10.532	71		35.38	8.210
Gender*								
Female	50	70.4	—	—	37	52.1	—	—
Male	21	29.6	—	—	34	47.9	—	—
Marital status								
Single	27	38.0	—	—	24	33.8	—	—
Married	41	57.7	—	—	44	62.0	—	—
Divorced	2	2.8	—	—	2	2.8	—	—
Living together	1	1.4	—	—	1	1.4	—	—
Education (year)								
	71		13.96	2.754	71		14.80	1.518
Employment*								
No	20	28.2	—	—	2	2.8	—	—
Yes	49	69.0	—	—	69	97.2	—	—

Missing	2	2.8	—	—	—	—	—	—
Health Problems*								
No	22	31.0	—	—	50	70.4	—	—
Yes	49	69.0	—	—	21	29.4	—	—
Health Complaints*								
No	58	81.7	—	—	69	97.2	—	—
Yes	12	16.9	—	—	2	2.8	—	—
Missing	1	1.4	—	—	—	—	—	—
IBS in Family*								
No	35	49.3	—	—	61	85.9	—	—
Yes	36	50.7	—	—	10	14.1	—	—
Psychological Problems*								
No	31	43.7	—	—	59	83.1	—	—
Yes	40	56.3	—	—	12	16.9	—	—
Psychiatric Diagnosis*								
No	42	59.2	—	—	65	91.5	—	—
Yes	29	40.8	—	—	6	8.5	—	—
Taking Psychiatric Medications*								
No	27	38.0	—	—	57	80.3	—	—
Yes	44	62.0	—	—	14	19.7	—	—
Psychological Support*								
No	37	52.1	—	—	62	87.3	—	—
Yes	34	47.9	—	—	9	12.7	—	—

* indicates significant difference, $p < .05$.

2.2. INSTRUMENTS

The survey package included Demographic Information Form, Traumatic Events Checklist (TEC), Toronto Alexithymia Scale (TAS-20) and Affective Neuroscience Personality Scales (ANPS).

2.2.1. Demographic Information Form

The form included questions regarding the age, gender, level of education, marital and working status and monthly income, comorbid psychosomatic illnesses, the triggering events and the duration of IBS, the family history of irritable bowel syndrome of the participants and the history of psychological symptoms, diagnoses and treatments. The form is presented in Appendix B.

2.2.2. The Traumatic Events Checklist (TEC)

TEC is a self-report inventory developed by Nijenhuis et al. (2002) in order to assess emotional abuse and neglect, physical abuse, sexual harassment, and sexual abuse, as well as general traumatic events, including loss of significant others, life threat by disease, parental divorce, and psychopathology of parents (e.g., alcohol or drug abuse). The TEC contains 26 items, with the total score ranging from 0 to 26. For each item, the responder marks whether the event has happened or not, the age at which the event first took place, the age at which the event ended, and evaluates the impact of the event on a scale from 1 (not at all) to 5 (very much). Cronbach's α for the TEC total score is 0.86. Cronbach's α for emotional abuse is 0.78, for sexual abuse 0.65, and for physical abuse 0.77. Test–retest reliability of the TEC total score is r= 0.91. TEC was translated into Turkish in 2002 by Vedat Şar. In one master's thesis, Cronbach's α for the TEC total score was reported as 0.73. Cronbach's α for emotional abuse was 0.68, for sexual abuse 0.60, and for physical abuse 0.48 (Gündüz, 2015). The form is presented in Appendix C.

In this study a number of different scores were calculated using this measure. Besides calculating a total trauma score for each participant through the

addition of all the endorsed items, specific trauma category scores were calculated through addition of all the items relevant to that category. These included sexual abuse (6 items), physical abuse (4 items), emotional abuse (3 items), emotional neglect (3 items), loss of significant others (4 items), family problems (2 items), medical trauma (3 items) and war trauma (2 items).

Additionally, total trauma scores were calculated with regard to the age groups of childhood, adolescence and adulthood. All the traumatic experiences that were reported to have occurred between the ages of 0 and12 were summed up to come up with Childhood Trauma score. Similarly all traumatic events that occurred between the ages of 12 and 18 were summed up to make up the Adolescence Trauma Score. In addition the traumatic events that were reported to have occurred after the age of 18 made up the Adult Trauma Score.

Finally, the Effect Score was calculated for each participant through addition of the perceived impact score they reported for each endorsed traumatic event.

2.2.3. The Toronto Alexithymia Scale (TAS-20)

TAS-20 is a 20-item self-report measure of alexithymia (Bagby, Taylor, & Parker, 1994). The scale has three factors: difficulties identifying feelings (DIF) including 7 items, difficulties describing feelings (DDF) including 5 items and externally oriented thinking (EOT) including 8 items. An example item of the DIF subscale is "'I am often confused about what emotion I am feeling", an example item of the DDF subscale is "It is difficult for me to reveal my innermost feelings, even to close friends" and an example item of the EOT subscale is "I prefer to analyse problems rather than just describe them". There are 5 items which are negatively keyed (items 4, 5, 10, 18 and 19). Each item is ranked on a 5-point Likert scale ranging from 1 (strongly disagree) and 5 (strongly agree) and a score that equals to or is greater than 61 indicates alexithymia which can be defined as inability to identify, describe and express emotions. The internal consistency of the scale was found to be .86 for the total TAS-20 score (Taylor, Bagby, &

Parker, 2003). The Turkish adaptation of the scale was made by Güleç et al. (2009) with 390 undergraduate students. The internal consistency was found to be 0.78 for the total alexithymia score (Güleç et al., 2009). In this study the reliability coefficients were calculated as 0.84. Only the Total Score was used in this study. The scale is presented in Appendix D.

2.2.4. The Affective Neuroscience Personality Scales (ANPS)

ANPS is a 110 items self-report tool which was developed by Davis et al. (2003) to measure the activities and the influences of six neurologically based affective networks, Play, Seek, Care, Fear, Anger and Sadness as investigated by Panksepp (1998). Each item is ranked on a 4-point Likert scale ranging from 1 (strongly agree) and 4 (strongly disagree). For each affect system there is a 7 items worded in the positive and 7 of items worded in the negative direction except for the spirituality system which includes a 6 items worded in positive and a 6 items worded in negative. 14 of items are used as filling items in this scale. In scoring items, the scale was reversed such that "4" became "0" and "1" became "3". Higher scores for each subscale indicate a higher degree of experiencing that affect. Reliabilities for the ANPS scales were computed using Cronbach's alpha and ranged from .65 to .86. These were considered adequate and in the range observed in psychological tests, with the Playfulness and Seeking scales below .70 and the Fear, Anger, and Spirituality scales above .80 (Davis et al., 2003). The Turkish adaptation of the scale was made by Özkarar et al. (2014) with 890 participants. With respect to the individual subscales, Cronbach's alphas were calculated as ranging from .55 to .78. In this study, the reliability coefficients were calculated as ranging from .57 to .76. The form is presented in Appendix E.

2.3. PROCEDURE

Data collection process started after receiving the approval from Ethics Committee Board of Istanbul Bilgi University. Participation was voluntary.

In order to recruit the IBS group, the gastroenterologists contacted their patients who met the inclusion criteria and gave short information about the

research at the private hospitals. They asked their patients to be voluntarily participant in the research. When the patient accepted to be a voluntarily participant for the research, the gastroenterologist gave the questionnaires in the closed envelopes and provided a private, silent room at the hospital for the patient to fill out the forms. The consent forms were in the closed envelopes. The participants initially received an informed consent form in the closed envelopes, which provided basic information about the study and asked for voluntarily participation. They were informed about their right to withdraw from the study and the contact information of researcher was given for questions or concerns about their participation. Each participant was assigned a number and only these numbers appeared on the questionnaires. The consent form was the only form that contained personal information and it was stored separately from rest of the questionnaires. The envelope also included the Informed Consent Form, Demographic Information Form, Traumatic Events Checklist (TEC), Toronto Alexithymia Scale (TAS-20) and Affective Neuroscience Personality Scales (ANPS) , in this order. It took participants approximately 40 minutes to fill out the questionnaires. The participants submitted the questionnaires back to their gastroenterologists and the researcher got the closed envelopes from the gastroenterologists. Besides, the researcher put the questionnaires on online IBS support platforms and most of the participants filled out the questionnaires online. The researcher reached some of the participants via snowballing.

The participants in the control group were contacted by the researcher through the Human Resources department of a private company they were working at. An e-mail which informed the employees about the study and inquired about their willingness to participate was sent. The employees' names were added to the list when they accepted to be participants and if they fit the criteria. The researcher gave the survey package to the employees at their offices and collected them back the same day. In addition the researcher put the questionnaires on online social networks and most of the participants filled out the questionnaires online. The researcher recruited rest of the participants via personal

contacts through snowballing. These participants received the questionnaires in an envelope, filled them out by themselves and gave the back to the researcher. After ending the collection of data, data started to be stored on the password-protected personal computers of the researcher and the advisor(s) and the hard copies of data was stored by the researcher.

RESULTS

3.1. PRELIMINARY ANALYSES

A correlation analysis was conducted to assess the relationships between different subscales included in the study.

Table 7

Correlation Coefficients (Pearson's r) for Subscales of TEC, TAS, and ANPS

Table 7.1 *Traumatic Events Checklist (TEC)*

	1	2	3	4	5	6	7	8	9
1.Sexual	1	.58**	.39**	.43**	.09	.17*	.10	.19*	.61**
2.Physical	.58**	1	.57**	.60**	.26**	.38**	.26**	.19*	.81**
3.E.Abuse	.39**	.57**	1	.61**	.13	.44**	.19*	.24**	.77**
4.E.Neglect	.43**	.60**	.61**	1	.16	.39**	.16*	.21*	.78**
5.Loss	.09	.26**	.13	.16	1	.27**	.17*	.20*	.38**
6.Family	.17*	.38**	.44**	.39**	.27**	1	.34**	.04	.61**
7.Medical	.10	.26**	.19*	.16*	.17*	.34**	1	.17*	.46**
8.War	.19*	.19*	.24**	.21*	.20*	.04	.17*	1	.32**
9.Total	.61**	.81**	.77**	.78**	.38**	.61**	.46**	.32**	1

Note. *. Correlation is significant at the 0.05 level (2-tailed). **. Correlation is significant at the 0.01 level (2-tailed).

Table 7.2 *Toronto Alexithymia Scale (TAS-20)*

	1	2	3	4
1. Difficulty Describing Feelings (DDF)	1	.724**	.328**	.855**
2. Difficulty Identifying Feelings (DIF)	.724**	1	.298**	.905**
3. Externally Oriented Thinking (EOT)	.328**	.298**	1	.610**
4. TAS- Total	.855**	.905**	.610**	1

Note. **. Correlation is significant at the 0.01 level (2-tailed).

Table 7.3 *Affective Neuroscience Personality Scale (ANPS)*

	1	2	3	4	5	6	7
1. Seek	1	-.00	.50**	.10	.42**	-.09	.27**
2. Fear	-.00	1	.08	.39**	-.24**	.65**	.10
3. Care	.50**	.08	1	-.11	.28**	.01	.37**
4. Anger	.10	.39**	-.11	1	.03	.35**	-.02
5. Play	.42**	-.24**	.28**	.03	1	-.33**	.22**
6. Sadness	-.09	.65**	.01	.35**	-.33**	1	-.07
7. Spirituality	.27**	.10	.37	-.02	.22**	-.073	1

Note. **. Correlation is significant at the 0.01 level (2-tailed).

3.2. DESCRIPTIVE STATISTICS

An examination of the TEC scores as displayed in Table 8 revealed that the range of total Trauma incidences reported by the IBS group and the control group were comparable (range= 0-18 for IBS group; Range = 0-16 for control group). However the mean trauma scores for the two groups looked different (IBS group *M*=5.08, *SD*=4.22; control group *M*=2.62, *SD*=3.26). Most prevalence of types of traumatic events in the IBS group were; emotional neglect followed by emotional abuse, family problems, physical abuse, medical trauma, sexual abuse, having a loss and war trauma. For the control group the most frequently reported types of traumatic events were emotional abuse followed by emotional neglect, family problems and having a loss, medical trauma, physical abuse and sexual

abuse. No war trauma was reported by the participants in the control group. Highest frequency of traumatic events were reported to have occurred in childhood in both IBS group (*M*=2.56, *SD*=3.166) and the control group (*M*=0.89, *SD*=2.081), followed by adolescence for IBS group (*M*=1.86, *SD*=1.944) and adulthood for the control group (*M*=0.72, *SD*=1.605). The least frequency was reported for adulthood for IBS group (*M*=1.54, *SD*=1.948) and adolescence for the control group (*M*=0.65, *SD*=1.522).

Table 8

Descriptive Statistics for the TEC Variables

	IBS Group *(N = 71)*				Control Group *(N = 71)*			
Scales/Subscales	*Min*	*Max*	*M*	*SD*	*Min*	*Max*	*M*	*SD*
TEC-Total	0	18	5.08*	4.222	0	16	2.62	3.266
-Sexual Abuse	0	3	0.42*	0.787	0	4	0.11	0.574
-Physical Abuse	0	4	0.69*	0.994	0	4	0.28	0.759
-Emotional Abuse	0	3	0.80	0.950	0	3	0.51	0.860
-Emotional Neglect	0	3	1.13*	1.013	0	3	0.41	0.785
-Loss	0	2	0.41	0.599	0	2	0.37	0.567
-Family Problems	0	2	0.70*	0.705	0	2	0.37	0.615
-Medical Trauma	0	3	0.55*	0.733	0	2	0.31	0.575
-War Trauma	0	2	0.06	0.287	0	0	0.00	0.000
TEC-Periods								
-Childhood	0	16	2.56*	3.166	0	13	0.89	2.081
-Adolescence	0	9	1.86*	1.944	0	9	0.65	1.522
-Adulthood	0	7	1.54*	1.948	0	11	0.72	1.605
TEC- Effect	0	83	20.76*	18.518	0	59	9.38	13.037

Note. *p < .05.

Descriptive statistics with means and standard deviations for the TAS variables in IBS group and control group are listed in Table 9. Only the total score of TAS was used in statistical analyses rather than the specific subscales of the measure.

Table 9

Descriptive Statistics for the TAS Variables

	IBS Group *(N = 71)*				Control Group *(N = 71)*			
Scales/Subscales	*Min*	*Max*	*M*	*SD*	*Min*	*Max*	*M*	*SD*
TAS - Total	31	79	51.03*	11.639	24	68	44.35	8.912
- DDF	6	25	12.99	4.051	5	21	11.34	3.144
- DIF	8	33	17.97	6.194	7	28	12.55	4.569
- EOT	12	28	20.07	3.670	10	30	20.46	3.553

Note. *p < .05.

Basic affective features were analysed through Affective Neuroscience Personality Scale (ANPS) including seven subcategories of seek, fear, care, anger, play, sadness and spirituality. The most prevalence of basic emotion factors in the IBS group were; care (*M*=27.92, *SD*=5.275) followed by anger (*M*=26.66, *SD*=5.054), fear (*M*=25.52, *SD*=5.717), seek (*M*=24.23, *SD*=4.310), sadness (*M*=23.01, *SD*=4.467), spirituality (*M*=21.41, *SD*=4.547) and playfulness (*M*=21.30, *SD*=5.457) as shown in Table 10. For the control group the most frequently reported basic emotion factors were; care (*M*=27.75, *SD*=5.585) followed by anger (*M*=25.52, *SD*=5.190), seek (*M*=24.51, *SD*=4.249), playfulness (*M*=24.49, *SD*=4.557).fear (*M*=22.03, *SD*=5.079), spirituality (*M*=21.41, *SD*=4.603) and sadness (*M*=19.45, *SD*=3.894) as shown in Table 10.

Table 10

Descriptive Statistics for the ANPS Variables

	IBS Group *(N = 71)*				Control Group *(N = 71)*			
ANPS-Subscales	*Min*	*Max*	*M*	*SD*	*Min*	*Max*	*M*	*SD*
- Seek	10	33	24.23	4.310	15	36	24.51	4.249
- Fear	12	36	25.52*	5.717	10	33	22.03	5.079
- Care	15	39	27.92	5.275	9	39	27.75	5.585
- Anger	16	38	26.66	5.054	14	38	25.52	5.190
- Play	5	33	21.30*	5.457	15	34	24.49	4.557
- Sadness	13	32	23.01*	4.467	9	33	19.45	3.894
- Spirituality	9	31	21.41	4.547	12	34	21.41	4.603

Note. *p < .05.

3.3. ANALYSES RELEVANT TO HYPOTHESES

Hypothesis 1: 1.a. The first hypotheses predicted that general traumatic life experiences as measured by the TEC would be more frequent in IBS patients compared to people without IBS.

To test this hypothesis, one-way ANOVA was conducted with group (IBS group or control group) as the independent variable and the total score of trauma as the dependent variable. The results of the analysis revealed that there was a statistically significant difference between two groups in terms of their total number of traumatic experiences, F (1,140) = 15.141, $p < .05$ as you can see in Table 11. The mean score of IBS group given to the total score of TEC was higher (M = 5.08, SD = 4.222) than the control group (M = 2.62, SD = 3.266) as shown in Table 8.

Table 11

One-way Analysis of Variance of the Total Score of Trauma in TEC

Source	*df*	*SS*	*MS*	*F*	*p*
Between Groups	1	215.669	215.669	15.141	.000***
Within Groups	140	1994.225	14.244		
Total	141	2209.894			

Note. ***. It shows significance at p < .001.

Another one-way ANOVA was conducted with group (IBS group or control group) as the independent variable and the total score of the effects of trauma as the dependent variable. The results of the analysis revealed that there was a statistically significant difference between two groups in terms of the reported effects of trauma on the participants, F (1,140) = 17.929, p < .05 as shown in Table 12. The mean total effect Tec score of the IBS group was significantly higher (M = 20.76, SD = 15.518) than the control group (M = 9.38, SD = 13.037) as shown in Table 8.

Table 12

One-way Analysis of Variance of the Total Score of the Effects of Trauma in TEC

Source	*df*	*SS*	*MS*	*F*	*p*
Between Groups	1	4597.634	4597.634	17.929	.000***
Within Groups	140	35901.662	256.440		
Total	141	40499.296			

Note. ***. It shows significance at p < .001.

The results of the ANOVA show that there is a statistically significant difference between the IBS group and the control group with regards to the

number traumatic experiences and the effects of traumatic experiences. In order to find out where these differences lied, a multivariate analysis of variance (MANOVA) was performed with group (the IBS group and control group) as the independent variable and seven types of trauma including sexual, physical, emotional abuse, emotional neglect, experiencing loss and divorce, having family problems and medical trauma as the dependent variables. There was a statistically significant difference between the IBS group and the control group on the dependent variables, F (7, 134) = 4.36, p = .000; *Wilk's* Λ = 0.81, partial η^2 = .18 as shown in Table 13. When the results for the dependent variables were considered separately, many types of traumas were found to reach statistical significance. These were emotional neglect, F (1, 140) = 22.29, p < .05, partial η^2 = .18; having family problems F (1, 140) = 9.26, p < .05, partial η^2 = .13; physical abuse F (1, 140) = 7.56, p < .05, partial η^2 = .05; sexual abuse F (1, 140) = 7.18, p < .05, partial η^2 = .04; and medical trauma F (1, 140) = 4.68, p < .05, partial η^2 = .03 as shown in Table 13. Two types of traumas were found to reach statistical insignificance. These were emotional abuse, F (1, 140) = 3.78, p < .05, partial η^2 = .02 and loss F (1, 140) = .18, p < .05, partial η^2 = .00. An inspection of the mean scores of the types of trauma indicated that the IBS group reported more emotional neglect, family problems, physical abuse, sexual abuse and medical trauma than the control group as shown in Table 8.

Table 13

Multivariate Analysis of Variance of the Total Score of the Types of Trauma in TEC

Variable	*Wilk's Λ*	*F*	*df*	*p*	*Partial* η^2
Types of trauma	0.81	4.36	7	.000***	.18
-Emotional neglect	_____	22.29	1	.000***	.13
-Having family problems	_____	9.26	1	.003**	.06
-Physical abuse	_____	7.56	1	.007**	.05
-Sexual abuse	_____	7.18	1	.008**	.04
-Medical trauma	_____	4.68	1	.032*	.03
-Emotional abuse	_____	3.78	1	.054	.02
-Loss	_____	.18	1	.667	.00

Note. *p < .05. **p < .01. ***p < .001.

Hypothesis 1.b. The second part of the first hypothesis predicted that traumatic experiences measured in early years would be more frequent in IBS patients compared to people without IBS.

A multivariate analysis of variance (MANOVA) was performed to explore the differences of the periods of traumatic experiences in two groups. Three dependent variables were used: childhood, adolescence and adulthood. The independent variable was the type of group including the IBS group and the control group. There was a statistically significant difference between the IBS group and the control group in terms of the periods of traumatic experiences, F (3, 138) = 6.55, p = .000; *Wilk's Λ* = 0.87, partial η^2 = .12 as shown in Table 14. When the ANOVA results for the dependent variables were considered separately, all three differences reached statistical significance. The strongest effect was seen for trauma in adolescence, F (1, 140) = 17.08, p < .05, partial η^2 = .10; followed by trauma in childhood, F (1, 140) = 13.89, p < .05, partial η^2 = .09; and trauma in adulthood, F (1, 140) = 7.43, p < .05, partial η^2 = .05 as shown in Table 14. An inspection of the mean scores indicated that the IBS group reported more

traumatic experiences in childhood, adolescence and adulthood compared to the control group as shown in Table 8.

Table 14

Multivariate Analysis of Variance of the Total Score of Periods of Trauma in TEC

Variable	*Wilk's Λ*	*F*	*df*	*p*	*Partial* η^2
The periods of traumatic events	0.87	6.55	3	.000***	.12
-Childhood	_____	13.89	1	.000***	.09
-Adolescence	_____	17.08	1	.000***	.10
-Adulthood	_____	7.43	1	.007**	.05

Note. *p < .05. **p < .01. ***p < .001.

Hypothesis 2 and 3: Hypothesis 2 and 3 indicated that the three positive basic emotion factors including playfulness, care and seeking as measured by the ANPS would be present to a lesser degree in IBS patients than in people without IBS. In addition three negative basic emotion factors including fear, anger, and sadness as measured by the ANPS were expected to be present to a higher degree in IBS patients compared to people without IBS. It was further expected that the most predominant difference between two groups would be seen in the Fear subcategory of the ANPS.

In testing hypothesis 2 and 3, a multivariate analysis of variance (MANOVA) was conducted to investigate the differences of the basic emotion factors in two groups. Seven dependent variables were used: three positive basic emotion factors including playfulness, care and seeking; and three negative basic emotion factors including fear, anger, and sadness. Spirituality was also included to see whether there is any difference in two groups. The independent variable was the type of groups including the IBS group and the control group. There was a statistically significant difference between the IBS group and the control group in terms of the basic emotion factors, F (7, 134) = 4.83 p = .000; *Wilk's Λ* = .80,

partial η^2 = .20 as shown in Table 15. Subsequent univariate ANOVA's indicated that, the group difference on three variables reached statistical significance level. These were sadness as a negative basic emotion factor, F (1, 140) = 25.66, p < .05, partial η^2 = .15; fear as a negative basic emotion factor, F (1, 140) = 14.81, p < .05, partial η^2 = .09; and playfulness as a positive basic emotion factor, F (1, 140) = 14.35, p < .05, partial η^2 = .09 as shown in Table 15. Other basic emotion factors were found to reach statistical insignificance. These non-significant variables were anger, F (1, 140) = 1.76, p < .05, partial η^2 = .01, seek F (1, 140) = .15, p < .05, partial η^2 = .00, care F (1, 140) = .03, p < .05, partial η^2 = .00, and spirituality F (1, 140) = .00, p < .05, partial η^2 = .00. An inspection of the mean scores indicated that the IBS group had higher scores in sadness and fear and lower scores in playfulness than the control group as shown in Table 8.

Table 15

Univariate Analysis of Variance of the Scores of Positive and Negative Basic Emotion Factors in the ANPS

Variable	*Wilk's Λ*	*F*	*df*	*p*	*Partial* η^2
Emotion Factors	0.01	4.83	7	.000***	.20
-Sadness	_____	25.66	1	.000***	.15
-Fear	_____	14.81	1	.000***	.09
-Playfulness	_____	14.35	1	.000***	.09
-Anger	_____	1.76	1	.187	.01
-Seek	_____	.15	1	.696	.00
-Care	_____	.03	1	.853	.00
-Spirituality	_____	.00	1	1.000	.00

Note. ***p < .001.

Hypothesis 4: Hypothesis four stated that difficulties in understanding and expressing emotions as measured by TAS would be more frequent in IBS patients compared to people without IBS.

In testing hypothesis 4, a one-way between-groups analysis of variance (ANOVA) was conducted to explore the differences between the IBS and the control group in terms of understanding and expression emotions, as measured by the TAS. The total score of TAS was used as a dependent variable and the independent variable was the type of groups including the IBS group and the control group. There was a statistically significant difference at the $p < .05$ level in TAS scores for two groups: F (1, 140) = 14.72, p = .000 as shown in Table 16. An inspection of the mean scores indicated that the IBS group (M = 51.03, SD = 11.639) had higher scores in alexithymia than the control group (M = 44.35, SD = 8.912) as shown in Table 8.

Table 16

One-way Analysis of Variance of the Total Score of the TAS

Source	*df*	*SS*	*MS*	*F*	*p*
Between Groups	1	1582.225	1582.225	14.726	.000***
Within Groups	140	15042.141	107.444		
Total	141	16624.366			

Note. ***$p < .001$.

3.4 ADDITIONAL ANALYSES OF VARIABLES PREDICTING IBS STATUS

In addition to the analyses related to the hypotheses, a multiple regression analysis was conducted to assess which of the factors that were found to be significantly different among the two groups predicted the IBS status better. A total of 6 variables were entered into the multiple regression analyses, stepwise entry was selected. These variables were years of education, the total trauma score, and the total score of sadness, the total score of fear, the total score of playfulness and the total score of alexithymia. The variables that predicted IBS status are displayed in Table 17.

The total score of sadness appeared at Model 1, explaining 15.5% of the variance in having irritable bowel syndrome, $\Delta R^2 = .155$, ΔF (1, 140) = 25.66, $p < .001$. After entry of the total score of sadness and trauma at Model 2, the total variance explained by the model 2 as a whole was 20.0%, $\Delta R^2 = .200$, ΔF (1, 140) = 7.81, $p < .001$. In final entry of the total score of sadness, trauma and playfulness at Model 3, the total variance explained by the model 3 as a whole was 23.7%, $\Delta R^2 = .237$, ΔF (1, 138) = 6.61, $p < .001$. In the final model, only the three variables among all variables which were entered in the analysis were statistically significant, with the total score of sadness recording the highest beta value ($\beta = .26$, $p < .001$), the total score of trauma recording the second highest beta value ($\beta = .22$, $p < .001$) and the total score of playfulness recording the third beta value ($\beta = -.20$, $p < .001$) and indicating a negative association with IBS status (see Table 17.) These three variables together were found to predict 23% of the variance in IBS status. The variables involving education years, the total score of fear and the total score of alexithymia did not enter into regression analysis.

Table 17

Summary of Hierarchical Regression Analysis for Variables Predicting Irritable Bowel Syndrome (N=142)

	Model 1			Model 2			Model 3		
Variable	*B*	*SE B*	*β*	*B*	*SE B*	*β*	*B*	*SE B*	*β*
Constant	-.423	.186	_____	-.388	.182	_____	.217	.296	_____
Sadness	.043	.009	.394***	.037	.009	.333***	.029	.009	.262**
Trauma	_____	_____	_____	.028	.010	.221**	.029	.010	.228**
Playfulness	_____	_____	_____	_____	_____	_____	-.019	.008	–.203*
R^2	.155	_____	_____	.200	_____	_____	.237	_____	_____
F	25.668***	_____	_____	17.368***	_____	_____	14.250***	_____	_____
ΔR^2	.155	_____	_____	.045	_____	_____	.037	_____	_____
ΔF	25.668***	_____	_____	7.817**	_____	_____	6.612*	_____	_____

Note. *p < .05. **p < .01. ***p < .001.

The previous regression analyses indicated that trauma was one of the significant predictors of IBS. In order to better understand the relative significance of different trauma types in predicting IBS status another stepwise multiple regression analysis was conducted with trauma subcategories as the independent variables. The independent variables that were entered in to the multiple regression equation were; sexual abuse, physical abuse, emotional abuse, emotional neglect, family problems and medical trauma. Stepwise entry was selected. As a result of this analysis the only significant predictor was found to be emotional neglect, explaining 13.7% of the variance in having irritable bowel syndrome ($\Delta R^2 = .137$, ΔF (1, 140) = 22.296, $p < .001$.).

Based on the result of this previous analysis the initial regression analysis was repeated through replacing the general trauma variable with emotional neglect variable. Hence a stepwise multiple regression analysis was conducted to with the independent variables of the total score of emotional neglect, the total score of sadness, the total score of fear, the total score of playfulness and the total score of alexithymia to predict IBS status. The variables involving the total score of fear and the total score of alexithymia were excluded in the analysis. The total score of sadness appeared at Model 1, explaining 15.5% of the variance in having irritable bowel syndrome, $\Delta R^2 = .155$, ΔF (1, 140) = 25.66, $p < .001$. Total score of sadness and emotional neglect appeared at Model 2 and the total variance explained by the model 2 as a whole was 20.0%, $\Delta R^2 = .200$, ΔF (1, 140) = 7.75, $p < .001$. In final entry of the total score of sadness, emotional neglect and playfulness at Model 3, the total variance explained by the model 3 as a whole was 23.1%, $\Delta R^2 = .231$, ΔF (1, 138) = 5.65, $p < .001$. In the final model, only the three variables among all variables which were entered in the analysis were statistically significant, with the total score of emotional neglect recording the highest beta value ($\beta = .23$, $p < .001$), the total score of sadness recording the second highest beta value ($\beta = .22$, $p < .001$) and the total score of playfulness recording the smallest beta value ($\beta = –.18$, $p < .001$) as you can see in Table 18.

Table 18

A Stepwise Multiple Regression Analysis for Variables Predicting Irritable Bowel Syndrome (N=142)

	Model 1			Model 2			Model 3		
Variable	*B*	*SE B*	*β*	*B*	*SE B*	*β*	*B*	*SE B*	*β*
Constant	-.423	.186	_____	-.256	.192	_____	.301	.301	_____
Sadness	.043	.009	.394***	.031	.009	.282**	.024	.010	.221*
Emotional Neglect	_____	_____	_____	.123	.044	.239**	.121	.044	.234**
Playfulness	_____	_____	_____	_____	_____	_____	-.018	.008	–.189*
R^2	.155	_____	_____	.200	_____	_____	.231	_____	_____
F	25.668***	_____	_____	17.334***	_____	_____	13.828***	_____	_____
ΔR^2	.155	_____	_____	.045	_____	_____	.032	_____	_____
ΔF	25.668***	_____	_____	7.759**	_____	_____	5.655*	_____	_____

Note. *p < .05. **p < .01. ***p < .001.

3.5 GENERAL SUMMARY OF THE RESULTS

The current study aimed to investigate the role of trauma, basic emotional features and the abilities to understand and to express emotions in irritable bowel syndrome by comparing the IBS group and the control group. The analyses provided support for the hypotheses of this study that expected to find significant differences between two groups in terms of trauma, basic emotion features and the abilities to understand and express emotions in irritable bowel syndrome.

Statistical analyses exploring the role of trauma in irritable bowel syndrome revealed that IBS patients have more traumatic experiences in their lives compared to people without IBS. In terms of the types of trauma, having emotional neglect is the most statistically significant difference among other types of trauma between two groups. After emotional neglect, IBS patients reported respectively more family problems, physical abuse, sexual abuse and medical trauma compared to the individuals without IBS. In relation with the periods of the trauma, the IBS group was found to report more frequent trauma experiences at all three period including childhood, adolescence and adulthood. The difference is the highest in adolescence.

Other statistical analyses exploring the role of basic affective features in irritable bowel syndrome found out that IBS patients reported higher scores in sadness and fear and lower scores in playfulness compared to the individuals without IBS. Although IBS patients reported slightly higher scores in anger and care, slightly lower scores in seeking compared to the control group and reported same scores in spirituality as the control group did, there was no statistically significant difference among these variables between the two groups.

The analyses inquiring the role of the ability to understand and express emotions in irritable bowel syndrome discovered that IBS patients reported higher score in alexithymia compared to the control group. It shows that IBS patients have more difficulties in understanding and expressing their emotions compared to the control group.

Based on the results of additional analyses in the study, 23% of the variance in IBS status can be explained by feelings of sadness, trauma experience, especially experiencing emotional neglect, and an inability of being playful- which means feeling generally unhappy and not having physical contact and fun with others.

DISCUSSION

This study mainly aimed to contribute to the understanding of the role of trauma, basic affective features and ability to understand and express emotions in irritable bowel syndrome. The understanding of development of IBS based upon the biopsychosocial model was enhanced by exploring the relationships between several factors including the types of trauma, the effect and periods of traumatic events, basic positive and negative emotion factors and the ability to understand and express emotions.

4.1. EVALUATION OF THE DEMOGRAPHIC CHARACTERISTICS OF IBS PATIENTS

The IBS group in this study consisted of 50 female (70.4%) and 21 male (29.6%) participants with an average age of 38 years. Majority of the participants had an undergraduate or graduate degree and belonged to mid to high socioeconomic class. The demographic characteristics of the IBS group was consistent with the previous findings as suggesting that female to male ratio in IBS prevalence is approximately 2/1 - 3/1 and IBS is seen in the higher socioeconomic groups (El-Serag, Olden, & Bjorkman, 2002; Houghton et al., 2016).

In terms of demographic characteristics, there are some statistically significant differences including employment, health problems, health complaints, the family history in IBS, psychological problems, psychiatric diagnosis, having psychiatric medications and psychological support in two groups. In IBS group, 28 percentage of IBS patients reported that they are unemployed, but there was a lack of knowledge about whether or not their unemployment were caused by the symptoms of IBS. The ratio of unemployment in IBS was close to the result of a previous study which indicated overall work productivity loss in IBS patients is 20.7 % (Buono, Carson, & Flores, 2017).

With regard to IBS in the family, 50.7% of IBS patients reported that they had at least one family member or one close relative who has IBS or has some complaints related to bowels. This result seems that the genetic transmission of IBS over generations or the transmission of somatization in a family environment might play an important role in the aetiology of IBS. Even, some previous studies suggested the heredity of IBS may be more associated with learned behaviours than genetic factors (Hopper, Bishop, & Easton, 2005).

In this study, 69 % of IBS patients reported they had one health problem or more than one health problems such as fibromyalgia syndrome, headache, migraine, gastritis, esophageal reflux, allergies, sinusitis, diabetes, hypothyroid, chronic lymphocytic thyroiditis, hypertension, anaemia, vertigo, psora, eczema, multiple sclerosis and scoliosis while 16.9 % of IBS patients reported one health complaint or more than one health complaints such as feeling pain on knees, neck, back and joints, teeth grinding, tension and restlessness. Similarly, previous studies suggested that IBS patients experience the comorbid conditions including fibromyalgia, chronic back pain and headache and gastro-oesophageal reflux twice as often as the general population does (Hillilä et al., 2007; Kennedy, Jones, Hungin, O'flanagan, & Kelly, 1998; Whitehead et al., 2002). The health complaints reported by IBS patients in this study seem as if they were somatic complaints which can lead to bias by being called as "somatizer" by medical professionals (Nelson et al., 2012). Even, some researchers suggested calling comorbid conditions which were experienced by IBS patients as functional somatic syndromes (Aggarwal et al., 2006) and McWhinney, Epstein, & Freeman (1997) explains the term of somatizer is a stigmatizing term which implies as they are "the author of their own bodily suffering" for the patients.

In terms of psychological well-being, 56.3 % of IBS patients reported they had psychological problems, 40.8 % of IBS patients reported they had psychiatric diagnosis and 60.2 % of IBS patients reported they had psychiatric medications. It is possible to say that almost 20 % of IBS patients use psychiatric medications without being diagnosed by psychiatrists. It might be caused by that

gastroenterologists also offer them to take some medicines which focus on the molecular level like serotonin receptor agonists and antagonists as their part of treatment process (Saha, 2014). Besides, 47.9 % of IBS patients reported they had psychological support from professionals such as psychiatrist, psychologist, and counsellor. The results indicated that more than half of IBS patients do not receive any psychological support even though more than half of them reported they had psychological problems and used psychiatric medications. It might be more difficult for IBS patients to accept the psychological factors of IBS and ask for psychological support than to perceive it as a biological disease and take some medications.

4.2. DISCUSSION OF TRAUMA AND IBS

The results indicated that the mean of total scores in traumatic events among IBS patients is nearly twice as high as that of individuals without IBS. In terms of the types of trauma, IBS group reported higher scores in all types of trauma compared to the control group. Among IBS patients the most prevalent type of traumatic experience was emotional neglect. This was followed by emotional abuse, family problems, physical abuse, and medical trauma, sexual abuse, having a loss and war trauma. In the control group the most prevalent trauma experience was emotional abuse which was followed by emotional neglect, family problems and having a loss, medical trauma, physical abuse, sexual abuse. War trauma was not reported in the control group. Most of the traumatic events were reported to have occurred in childhood in both the IBS group and the control group. This was followed by adolescence for the IBS group and adulthood for the control group. Indeed, previous studies mostly focused on severe traumatic experiences such as emotional, physical and sexual abuse in early years and under the age of 18 among IBS patients (Ali, Toner, Stuckless, Gallop, Diamant, Gould, & Vidins, 2000; Nelson et al., 2012; Videlock et al., 2010). The issue of emotional neglect was neglected by itself as a research topic by many researchers in literature. However the most statistically significant difference between two groups in this study was seen in the emotional neglect

category. Also, the strong associations between IBS and traumatic experiences in later life were considered in this study through looking into the periods of traumatic events such as childhood, adolescence and adulthood separately. The findings of the study support the previous findings about the strong associations between IBS and traumatic experiences in later life (Ali et al., 2000; White et al., 2010). In addition, the IBS participants reported higher scores in the effects of trauma with a high variance than that of the participants in control group. This study adds to the relationships between IBS and traumatic experiences literature by pointing out the importance of emotional neglect as a type of trauma, the significance of experiencing trauma in early ages and in later life and the effects of trauma on IBS patients.

In the study, general traumatic life experiences as measured by TEC were found to be more frequent in IBS patients compared to people without IBS as expected. This finding was consistent with the findings of many previous studies which showed that IBS has a strong association with traumatic experiences in early ages and later life (Bradford et al., 2012; Chitkara et al., 2008; Mayer et al., 2001; Nelson et al., 2012; Ross, 2005; Talley et al., 1995; Videlock et al., 2010; White et al., 2010). It was also interesting to find that emotional neglect is the most frequent traumatic experience for IBS patients while emotional abuse is the most frequent traumatic experience for the control group. The group difference was the highest between the IBS and control groups with regards to emotional neglect experience. This finding adds to the trauma and IBS literature about the importance of emotional neglect as a traumatic experience in the development of IBS, which is a subject that is less understood in general and rarely discussed in the current literature.

Besides, it is important understand the concepts of emotional neglect and emotional abuse to make sense why emotional neglect matters for IBS patients more than all other types of trauma. Emotional neglect is often replaced and is confused by the term of emotional abuse even though they have fundamentally different meanings. Emotional neglect can be defined as a persistent failure to

meet the child's basic and essential emotional needs, an intentionally act of forgetting to care and not preventing the child to be emotionally harmed while emotional abuse can be described as a kind of misuse of emotions and harming someone emotionally (Glaser, 2002; Spertus, Yehuda, Wong, Halligan, & Seremetis, 2003; Norman et al. 2012). In one example, if a child is emotionally neglected by his/her caregiver, it means that the child's emotional needs were not seen and met by his/her caregiver and the child does not learn how to regulate his/her emotions. In another example, if a child is emotionally abused, it means that there is a caregiver around for the child but the child is emotionally maltreated by his/her caregiver. Based on the explanations about emotional neglect, the IBS patients are supposed to have more unmet emotional needs, lack of emotional reactions of a caregiver and inability to understand and express emotions compared to the control group. Also, a lack of sense of being protected may have led to more experiences of fear, lack of security which may be more related to problems with intestines.

The other types of trauma involving respectively family problems, physical abuse, sexual abuse and medical trauma were also found to be significantly different in two groups in this study. In the current literature, family problems such as having a parent with alcohol or psychiatric disorder, living in poverty and having to look after parents and/or brothers and sisters when you were a child were underestimated as traumatic experiences to investigate whether it has an influence on the development of IBS. Instead, there are several previous studies which focused more on the associations between physical and sexual abuse and IBS (Chitkara et al., 2008; Delvaux, Denis, & Allemand, 1997; Drossman, 1997; Heitkemper et al., 2005). In this study, the result was consistent with the findings of previous studies by contributing the importance of family problems and medical trauma as well as physical and sexual abuse on the development of IBS to the current literature. In one study, family problems and medical trauma were mentioned as "personal serious injury or illness and experiencing death of close family" under the name of general traumas by

pointing out the importance of general traumas and emotional abuse in the development of IBS (Halland et al., 2014). However, there is a lack of knowledge about how family problems and medical trauma might be significant factors in the development of IBS in the current literature.

In this study, traumatic experiences measured by TEC in early years were expected to be more frequent in IBS patients compared to people without IBS. IBS patients reported to have more traumatic experiences in all periods of life; however the difference was most significant for adolescence years, followed by childhood and adulthood. Previous studies have focused on the importance of the childhood traumas in the development of IBS (Bradford et al., 2012; Halland et al., 2014; Videlock et al., 2010). However, the importance of adolescence year traumas seems to be less understood in current literature.

4.3. DISCUSSION OF BASIC AFFECTIVE FEATURES AND IBS

It has been first time to use the Affective Neuroscience Personality Scale in IBS so far in the literature. Some of the findings were unexpected while some of them were expected for us related with basic affective features among IBS patients in this study. Depended on the results, IBS patients reported higher scores in fear and sadness and lower scores in playfulness compared to the control group as expected. The IBS patients were supposed to have lower scores in other positive basic emotion factors including seeking and caring, it was surprising that they have similar scores as the control group have. They were also supposed to have higher scores in anger as other basic negative emotion factor than the control group. Yet, they reported slightly higher scores in anger than the control group. The findings in this study can be seen consistent with the findings of previous studies which indicated IBS had significantly higher scores in neuroticism and concealed aggression compared to the controls (Tanum & Malt, 2001; Farham et al., 2007). Furthermore, in spirituality as a seventh basic emotion factor, both the IBS group and the control group reported exactly same scores. The IBS patients could have been expected to report higher scores than the control group in

spirituality by considering the similarities of the concepts of “self-transcendence” and “spirituality”. The findings of the research in Turkey indicated that IBS patients had a significantly higher score in “self-transcendence” subscale (Taymur et al., 2007).

The findings in relation with basic affective features indicated sadness and fear as the negative basic emotion factors and playfulness as a positive basic emotion factor that are significantly different in the two groups. Based on the findings, IBS patients are supposed to feel more sadness and fear and less playfulness compared to the control group. In the current literature, there has been no research investigating the primary basic emotions in IBS patients until now. This study is the first one which explores the relationships between basic emotion factors and IBS by using the ANPS scale as a measurement tool. In previous studies, some scales and inventories including the EPI, the FFM and the TCI were mostly used to gain information about the personality traits, temperament and character features of IBS patients. The finding of personality scales showed that IBS patients had a higher level of neuroticism and a lower level of extraversion compared to healthy individuals (Esler & Goulston, 1973; Muscatello et al., 2016; Loo, 1979; Palmer et al., 1974). On the basis of the definition of neuroticism, IBS patients are expected to have more tendencies toward negative emotions (anxiety, hostility, depression) with high reactivity to physiological changes while based on the definition of extraversion they are expected to have attitudes to experience positive emotions, warmth, excitement seeking, and activity to a lesser degree. In that case, it is not surprising to find that IBS patients feel more sadness and fear and less playful compared to healthy individuals.

The patients’ being less playful might also be explained by the findings of the previous research that found IBS patients had significantly higher scores in “harm-avoidance” subscale of the TCI and lower scores in cooperativeness which is one of the character traits compared to the control group. This means that they have characteristics that lead to inhibition of behaviours such as pessimistic

worrying and passive dependent behaviours and in difficulty in collaborating with others (Karacaer et al., 2015; Taymur et al., 2007).

Panksepp and his colleagues (2011) explained that when the system of fear activates, worry, anxiety, freezing behaviour or fleeing behaviour occur. In that case, it is possible to say that the body can also prepare itself by emptying the intestines to be ready for fleeing or stopping digestion in the intestines to be ready for freezing in the cases of dangers. IBS patients might have felt fearful in daily lives due to early trauma and their fear systems might be over activated. The pessimistic worries in IBS patients about the outside world might contribute to the activation of the fear system, harm-avoidant behaviours, social introversion and lack of cooperativeness. This may further be associated with lack of playfulness.

Play behaviours consist of physical contact in positive ways and competition which can help to improve social interaction and positive affective experiences (Barrett et al., 2013). Lack of play behaviours can lead to less playfulness, namely a lack of feeling happy, having fun and laughter with others and playing games with physical contact. Besides, childhood play experiences helps to acquire social skills which is associated with the expression of extraverted behaviours. If a child's ability to play is blocked or inhibited in childhood, this situation prevents him/her from having opportunities to learn play skills. And so, insufficient play skills would increase the chance of negative social experiences such as rejection and would decrease the opportunity to experience the positive feelings such as having social fun later on. Again, it would reduce levels of social interactions and lead the person to be less sensitive to positive social rewards (Davis et al., 2003). Poor social skills which result in social rejection might cause to the activation of sadness and anger system. Later on, this can also lead to anxieties, social deviance and introversion as the findings of previous studies shown in IBS patients (Mousavinasab et al., 2007). Besides, stress can be discharged through play behaviours. It is more likely for people who are unable to discharge stress through play behaviours to have difficulties in

regulating the activation of autonomic nervous system. It is also more likely for them to have some psychosomatic illnesses.

In this study, it was found that IBS patients have a slightly higher score in anger compared to the control group. This difference was approaching significance. Based on Panksepp's and his colleagues' (2011) explanations, when the anger system is activated, it shows itself as aggressiveness and "fight" instead of "flight" responses. IBS patients might have tendencies to have "flight" responses more than "fight" responses when considering that they feel more fear than anger. Findings of some previous studies showed that IBS patients have significantly higher scores in concealed aggression (Tanum & Malt, 2001), they score higher on the psychopathic-deviate, paranoia and social introversion subscales of the MMPI (Mousavinasab et al., 2007). It might be the case that IBS patients tend to repress their anger, somatise it or project their anger to other people, which might lead to paranoid thoughts about others as if others might harm them. The anger system might be activated as a response to perceived danger when they are in close relationships, as previous research indicated that IBS patients have higher anxiety in close relationships compared to patients with inflammatory bowel disease (Bengtsson, Sjöberg, Candamio, Lerman, & Ohlsson, 2013) and have an insecure attachment style (Ben-Israel et al., 2016). It is possible that this leads to IBS patients continuously being in "fight" mode while in close relationships, which may be more stressful than turning to "flight" mode, thereby causing them to isolate themselves from social interactions, to which the lower self-esteem of IBS patients may further contribute (Bengtsson et al., 2013).

The most significant difference among the two groups was seen in the feeling of sadness. The activation of sadness system is caused by loss, separation distress, and breaking of social bonds (Colonnello, Iacobucci, & Panksepp, 2011; Panksepp, 2011), which leads to painful grief. Based on this explanation, it seems that for IBS patients the experience of separation distress, loss and suffering from breaking of social bonds might be significant. In one study with rats, it was observed that the rats which separated from their mothers showed depressive

symptoms and this led to changes in the microbiota in their intestine system (Desbonnet et al., 2010).

The early experiences of emotional neglect or disruptions in the family system may have led IBS patients to experience much sadness. This can result in dysregulations in the interaction of the brain-gut axis and have negative impacts on the microbiota in their intestine system. Besides, more than 90% of the body's serotonin and almost 50% of the body's dopamine reside in the gut (Martinucci et al., 2015; Smitka et al., 2013). How sad a person feels might also be affected by the levels of serotonin in gut. The dual relationships between brain and gut through the vagus nerve create a vicious cycle. That is to say the deterioration on the microbiota in the intestine system may affect serotonin levels in the gut, which can also feed into the sad mood, which may in turn disrupt the microbiota in the gut. Therefore, it is difficult to determine whether someone starts to have IBS symptoms because of feeling sad or if someone starts feeling sad because of having IBS symptoms.

In this study we are only able to assess the frequency of current affective experiences through the use of ANPS. Therefore it is also very likely that the high level of sadness reported by the IBS patients is a reaction to their illness. In fact it is not possible to decipher in this study whether the experience of intense sadness is established in the early years, constitutional or secondary to their current situation. In either case this study indicates that it is an important part of their emotional world which needs to be further investigated.

4.4. DISCUSSION OF ALEXITHYMIA AND IBS

Difficulties in understanding and expressing emotions measured by TAS are expected to be more frequent in IBS patients compared to people without IBS. In this study, it was found that IBS had higher scores in alexithymia than the control group. None of participants in this study reached to the alexithymic level which requires having a total score above 61 in the TAS. This finding of the study was consistent with the findings of previous researches (Costin, Petrar, &

Dumitrascu, 2006; Portincasa, Moschetta, Baldassarre, Altomare, & Palasciano, 2003).

Based on the findings, it is possible to say that IBS patients have more difficulties to identify, perceive, understand and express emotions. They may also be more limited in their fantasy life, have an externally orientated cognitive style, and difficulties in distinguishing between feelings and the bodily sensations of emotional arousal (Nemiah, Freiberger, & Sifneos, 1977). Inabilities to understand and express emotions can lead to somatisizing of emotions in order to discharge them through bodily symptoms. Besides, Lane and Schwartz's (1987) levels of emotional awareness model claims that a focus on somatic sensations instead of consciously experienced emotions occurs in the case of the lowest levels of emotional awareness.

4.5. THE ROLE OF TRAUMA AND AFFECTS IN PREDICTING IBS STATUS

In order to better evaluate which of the significant differences between the IBS and control groups better predicted IBS status further analyses were conducted using multiple regression. When significant variables such as years of education, all types of trauma except for war trauma, sadness, fear and playfulness, and alexithymia were entered into the regression equation, only emotional neglect, sadness and playfulness were found to be the variables that contributed to predicting IBS status.

These findings demonstrated that emotional neglect as a traumatic experience, sadness as a basic negative factor and playfulness as a basic positive factor are significant predictors of IBS. Interestingly, in this study emotional neglect was the most prominent traumatic experience as a relatively neglected topic compared to other types of traumatic experiences especially abuse in research literature (Bifulco & Moran, 1998). The neglect of emotional neglect in the research literature is inconceivable in the consideration of that the evidence showed that the traumatic effect of neglect can equal or can be more than abuse

and even the traumatic effect of neglect can continue to adulthood (Egeland, 1997). The evidence showed that traumatized people, either abused or neglected, in their childhood have complex post-traumatic syndromes which include chronic affect dysregulation, somatization, and distortions in concepts about self and others as well as destructive behaviours against self and others (Herman, 1992). Meanwhile, van der Kolk (1994) claims that it is easier to have effective treatment with someone who has self-destructive behaviour if that person is not neglected by pointed that neglect is more difficult to be treated compared to abuse. As a few studies pointed out the importance of neglect in literature, the findings of this study also added the importance of emotional neglect in development of IBS to the literature.

In the light of the findings of this study, it is likely that IBS patients may have experienced emotional neglect by their significant others in their lives, especially in childhood. The lack of affection and attention by a significant other may have also meant the lack of a significant other who could have helped them understand, identify and describe their emotions (Lane & Schwartz, 1987). Consequently, they might have developed tendencies to experience their emotions on bodily sensation level instead of processing them through self-expression.

Besides, it can be speculated that there might be one of ways for IBS patients to gain affection and attention from outside through having physical complaints or illnesses such as chronic irritable bowel syndrome. It can help them to feel cared by others and feel connected with others through having irritable bowel syndrome and make them less emotionally neglected. Either having irritable bowel syndrome might be occurred when there is a persistent emotionally neglect by a caregiver. Psychological impacts of emotional neglect as other trauma types are stored in somatic memory and expressed themselves by leading some changes in the biological stress response (van der Kolk, 1994). In that vein, it is said that intense emotions lead some special memories related to traumatic experiences to be dissociated from consciousness and them to be stored as visceral sensations or visual flashbacks (van der Kolk & van der Hart, 1980).

The early experience of loss and separation may also be a factor in the inhibition of the ability to play. Limitations in playfulness can further lead to a limitation in developing social skills to communicate with others and can further feed into social isolation which would further increase sadness thus creating a vicious cycle.

4.6. CLINICAL IMPLICATIONS

One of the aims of this study was firstly to understand the role of trauma, basic affective features and ability to understand and express emotions in irritable bowel syndrome, which helps to comprehend the psychological dynamics of IBS patients. Another aim of this study was to figure out what kind of therapies might long term effect on the treatment for IBS and to come up with some suggestions to improve the efficacy of psychotherapy with IBS patients.

The development of various psychological therapies for IBS patients were caused by the deprivation of effective medical treatment (Laird, Tanner-Smith, Russell, Hollon, & Walker, 2017). The biopsychosocial model provided a basis for the rationalization of these therapies (Engel, 1977), which was used for functional gastrointestinal disorders by some researchers (Halpert & Drossman, 2005; Tanaka et al., 2011). When this model was applied to IBS, this model claims that emotions, thoughts and behaviors are associated with the gut physiology and various symptoms. It also describes the pathways by the help of that psychological factors have impact on the clinical outcomes including gastrointestinal symptoms, daily life functioning and psychological well-being in IBS (Laird et al., 2017).

With regard to IBS treatment, studies show that the best effective treatment is a combination of medical treatment and psychotherapy, particularly cognitive behaviour therapy (CBT) (Heymann-Mönnikes et al., 2000). Similarly, a meta-analysis reported that a number of psychotherapies including CBT, relaxation therapy and hypnosis therapy have similar degrees of efficacy on gastrointestinal disorders, which means there is no significant difference on the

efficacy of different types of psychotherapies. Besides, it was stated that the length of therapy did not matter for the efficacy of the treatment (Laird, Tanner-Smith, Russell, Hollon, & Walker, 2016). Yet, in another systemic meta-analysis, it was reported that CBT provides with the greatest improvement on daily life functioning followed by relaxation therapy (Laird et al., 2017).

Previous studies showed that the importance of having psychotherapy, as well as medical treatment for the treatment of IBS. In the light of results of this study, the significant factors including emotional neglect, sadness and playfulness in the development of IBS should be considered as subjects to be worked during the process of therapy. Based on the findings of the study, psychotherapy should help IBS patients to gain the ability to understand and express their emotions, to process their traumatic events, particularly emotional neglect on the consciousness level rather than somatic level, to be aware of their depressive feelings and the times when and which the events their IBS symptoms are exaggerated.

4.7. LIMITATIONS AND IMPLICATIONS FOR FUTURE RESEARCH

It is possible to address a number of limitations of this study. It firstly must be kept in the mind that the IBS group and the control group are significantly differentiated from each other in the terms of certain demographic variables including gender and employment. Yet, this was expected because the profile of IBS patient is already different than that of the normal population. Also, the characteristics of the sample of IBS patients in this study are consistent with the characteristics of the general profile of IBS patients which was reported in the previous studies (Houghton et al., 2016; Lovell & Ford, 2012). In future studies, it would be better to equalize the qualifications of demographic variables before comparing two groups to each other. Besides, the size of sample of two groups is small to generalize from the findings of the study. In following studies, it would be better to include a large of size of sample to compare two groups.

Another limitation of the current study is related to the high correlation between the sadness and fear subscales of the ANPS.. These subscales are highly

intercorrelated (.73) in a previous study (Davis et al., 2003); they are also intercorrelated (.65) in this study. The ANPS as a measurement tool also takes too long to be filled out by the participants. Further studies might use a brief form of the ANPS (BANPS) in order to have a better understanding of affective personality features since it was shortened so as to improve the psychometric properties of each scale by considering the limitations of the ANPS (Barrett, Robins, & Janata, 2013).

Furthermore, no method was used to determine cause-effect relationships between the variables in the current study, such that it is difficult to base interventions on this research. Therefore, in order to gain more practical knowledge that is applicable in clinical settings; future research might focus on establishing causal relationships.

CONCLUSION

This was the first comprehensive study to understand of the role of trauma, basic affective features and ability to understand and express emotions as important factors in the development of irritable bowel syndrome in research literature. The results of the study showed that there are significant differences on the types of trauma including emotional neglect, emotional abuse, family problems, physical abuse, and medical trauma, sexual abuse, having a loss and war trauma between the IBS group and the control group. In terms of basic affective features, IBS patients reported higher scores in sadness and fear and lower scores in playfulness compared to the control group. Besides, IBS patients had higher scores in alexithymia compared to the control group, which means that the IBS patients have more difficulties to understand and express their emotions compared to the control group. IBS patients had higher scores in depression and anxiety compared to the control group. Actually, this finding of the analyses is consistent with the findings of the results showed that sadness and fear are the most significant difference as basic negative emotions between two groups. The most interesting finding is that emotional neglect, sadness and playfulness were found as predictors of the development of IBS.

In the light of evidence in this study, there are a number of points to be suggested. First, it can be said that early traumatic experiences especially emotional neglect seem to be a significant factor that is related to developing IBS. This study also points to the importance of better understanding the feelings of sadness and fear for IBS patients and how these may influence their brain-gut system. The protective impact of playfulness is another important finding of this study. Clinically, it might be suggested that emotion-focused therapies and modalities that also enhance playfulness might be beneficial for IBS patients in order to help them better understand and identify their emotions and to be able to discharge them on a somatic level.

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APPENDICES

Appendix A

Informed Consent Form

(In Turkish)

Bilgilendirilmiş Onam Formu

Değerli Katılımcı,

İstanbul Bilgi Üniversitesi Klinik Psikoloji (Yetişkin Alt Dalı) bölümü yüksek lisans öğrencisi Selma Çoban'ın irritable bağırsak sendromu ile travmatik hayat deneyimleri ve bazı duygusal etkenlerin ilişkisini inceleyen tez çalışmasına anket formlarındaki sorulara cevap vererek katılımınızı rica ediyorum.

Bu çalışmaya 18-65 yaş aralığındaki bireyler katılabilir. Eğer bu yaş aralığındaysanız katılımcı olarak yaklaşık 40 dakika sürecek olan anket formlarını doldurmanız beklenmektedir. Bütün soruların eksiksiz bir şekilde doldurulması araştırmanın güvenilirliği ve geçerliği açısından önemlidir. Bu konudaki desteğiniz için teşekkür ederim.

Araştırma boyunca kimliğiniz gizli tutulacaktır. Okumakta olduğunuz onam formu dışında hiçbir yere adınızı ve soyadınızı yazmanız istenmemektedir. Anket formları kapalı bir zarf içinde dağıtılacaktır ve toplanacaktır. Anket formları sadece bir numarayla kaydedilecektir. Böylelikle bireysel bilgiler ve kimlikler gizli tutulacaktır.

Bu çalışma, gönüllülük esasına dayanmaktadır. Gönüllü olarak bu araştırmaya katılmayı kabul ederseniz, doğru ya da yanlış bir cevabı olmayan bu soruları olabildiğince aslına uygun bir şekilde yanıtlamanız rica olunur. Seçenekli sorularda sadece bir seçeneği işaretleyiniz. Herhangi bir nedenden dolayı

çalışmayı yarıda bırakmak isteyebilirsiniz; bu durumda katılımınız geçersiz sayılacaktır.

Bu araştırmaya tedavi gördüğünüz birimde size uygulanan ya da uygulanmış olan tıbbi tahlil ve tedavilere dair herhangi bir veri dâhil edilmemiştir. Tedaviniz iletişim içinde olduğunuz doktorunuz tarafından yürütülmeye devam edecektir.

Çalışmayla ilgili sorularınız için Selma Çoban'a mesai saatleri içinde (09.00-17.00) selma.coban@bilgi.edu.tr e-posta adresinden veya 0531 368 20 45 numaralı telefondan ulaşabilirsiniz.

Araştırmaya zaman ayırdığınız ve katkıda bulunduğunuz için şimdiden çok teşekkür ederim.

- ☐ Araştırmanın yukarıdaki şartlarını okudum ve katılmayı kabul ediyorum.
- ☐ Araştırmanın yukarıdaki şartlarını okudum ve katılmayı kabul etmiyorum.

Adı- Soyadı:

İmza:

Tarih:

Appendix B

Demographic Information Form

(In Turkish)

Demografik Bilgi Formu

Aşağıdaki boşluklara sizin için **doğru olan bilgileri yazınız** ve doğru olan seçeneklere **X** işareti koyunuz.

1) Yaş: ___

2) Cinsiyet: 1. Kadın ___ 2. Erkek ___

3) Medeni haliniz:1. Bekâr ___2. Evli___3. Boşanmış ___4. Birlikte yaşıyor___5. Dul ___

4) En son mezun olduğunuz okul (diploma alarak) hangisidir?
□ İlkokul □ Ortaokul □ Lise □ Meslek Yüksek Okulu/ İki yıllık okul □ Üniversite □ Yüksek Lisans/Doktora

5) Çalışıyor musunuz? 1. Evet ___ 2. Hayır ___ 3. Mesleğiniz? _____

6) Aşağıda **toplam aylık gelirinizi** işaretleyebileceğiniz bir tablo vardır. Tabloda toplam aylık kazancınıza denk gelecek olan uygun yeri bularak işaretleyiniz.

Miktar (TL)	Toplam aylık geliriniz
1. 1.000 TL ve aşağısı	
2. 1.000 TL ve 2.000 TL arası	
3. 2.000 TL ve 4.000 TL arası	
4. 4.000 TL ve 7.000 TL arası	
5. 7.000 TL ve10.000 TL arası	
6. 10.000 TL ve üstü	

7) İrritable bağırsak sendromu hastalığınızın başlangıcını tetiklediğini düşündüğünüz herhangi bir olay var mı ya da hastalık başladığında hayatınızda herhangi bir değişiklik olmuş muydu? Varsa olay(lar)ı anlatınız **(nasıl, ne zaman?)**

8) Ne kadar süredir bu şikâyetleriniz var? ___

9) Herhangi bir tanı almış başka bir sağlık probleminiz/hastalığınız var mı? Varsa açıklayınız:
(Tanı yoksa da şikâyetleriniz varsa **neler olduğunu ve ne zaman başladıklarını anlatınız?**)

10) Ailenizde IBS hastalığına benzer şikâyetleri olan birileri var mı? Kimler?

Yakınlık derecesi	Almış oldukları tanı; tanı yoksa şikâyetleri

11) Aldığınız herhangi bir psikiyatrik tanı oldu mu? 1. Evet ___ 2. Hayır ___

Tanı olmasa da varsa psikolojik rahatsızlıklarınızı anlatınız
……
……
……
Varsa psikiyatrik rahatsızlığınızın tanısı nedir ve ne zaman bu tanıyı aldınız?
……
……
……
……
……...

12) Hayatınızın bir döneminde psikiyatrik ilaç kullandınız mı?
1. Evet ___ (hangi ilaç, ne kadar süreyle,)

   ……
   ……
   .....
   .....
   .....
2. Hayır ___

13) Bu zamana kadar herhangi bir psikolojik destek aldınız mı? 1.Evet ___ 2. Hayır ___

Aldıysanız kimden, ne kadar süreyle aldığınızı açıklayınız.

……
……
……
……
……
……....

Appendix C

Traumatic Experiences Checklist (TEC)

(In Turkish)

Travmatik Yaşantılar Ölçeği (TYÖ)

İnsanların başından geçen ileri derecede üzücü ve sarsıcı yaşantılara TRAVMA adı verilmektedir. Aşağıdaki listede sizin de başınıza gelmiş olabilecek bazı travma yaşantıları sorulmaktadır. Sorularda üç şey üzerinde durulmaktadır: Olay başınızdan geçmiş midir? Olay sırasında kaç yaşındaydınız? Olay sizi ruhsal bakımdan ne kadar etkilemiştir?

A) Sorulan 29 çeşit olaydan her biri için başınızdan geçip geçmediğini EVET ya da HAYIR cevabını daire içine alarak işaretleyiniz.

B) EVET cevabını verdiğiniz her soruda olay sırasında kaç yaşında olduğunuzu yazınız. Olay bir kereden fazla oldu ise her defasında kaç yaşında olduğunuzu belirtiniz. Eğer olay bir yıldan fazla sürdü ise belirtiniz (örneğin 7 ile 12 yaş arası) biçiminde yazınız.

C) Başınızdan geçen her bir olayın üzerinizdeki ruhsal ETKİSİNİ (uygun düşen rakamı daire içerisine alarak) belirtiniz.

1 = hiç etkilemedi

2 = biraz etkiledi

3 = orta derecede etkiledi

4 = çok etkiledi

5 = ileri derecede etkiledi

	Başınıza geldi mi?	**Kaç yaşında?**	**Etkilenme?**
1.Çocukluğunuzda ana babanıza ya da kardeşlerinize bakmak zorunda olmak	Evet Hayır		1 2 3 4 5
2. Ailenizde problemler olması (örneğin ana ya da babanızda alkolizm ya da ruhsal problem olması, fakirlik)	Evet Hayır		1 2 3 4 5
3. SİZ ÇOCUKKEN aile bireylerinden birinin ölümü (kardeş ya da ana baba)	Evet Hayır		1 2 3 4 5
4.ERİŞKİNLİĞİNİZDE aile bireylerinden (çocuk ya da eş) ölümü	Evet Hayır		1 2 3 4 5
5.Vücutça ağır yaralanma (örneğin kol ya da bacak kaybı, ağır yanık)	Evet Hayır		1 2 3 4 5
6. Hastalık, ameliyat ya da kaza nedeniyle hayati tehlike geçirme	Evet Hayır		1 2 3 4 5
7. Ana babanızın boşanması	Evet Hayır		1 2 3 4 5
8. Kendinizin boşanması	Evet Hayır		1 2 3 4 5
9. Birisinin sizi ölümle tehdit etmesi (örneğin gasp sırasında)	Evet Hayır		1 2 3 4 5
10. Şiddetli ağrı çekme (örneğin yaralanma yada ameliyat nedeni ile)	Evet Hayır		1 2 3 4 5
11. Savaş koşullarında yaşanan olumsuz olaylar (örneğin esir düşme, yakınların ölümü, mahrumiyet, yaralanma)	Evet Hayır		1 2 3 4 5
12. İkinci kuşak olarak savaşın etkilerine maruz kalma (Ana baba ya da yakın akrabalarınızın başına savaş koşullarında kötü olaylar gelmiş olması)	Evet Hayır		1 2 3 4 5
13. Başkasının travmaya uğramasına tanık olma.	Evet Hayır		1 2 3 4 5
14. Ana baba ya da kardeşleriniz tarafından duygusal ihmale uğrama (örneğin yalnız bırakılma, yetersiz sevgi görme)	Evet Hayır		1 2 3 4 5

	Başınıza geldi mi?	**Kaç yaşında?**	**Etkilenme?**
15. Diğer aile bireyleriniz tarafından duygusal ihmale uğrama (örneğin amca, dayı, teyze, hala, yeğen, büyükanne ve büyükbaba)	Evet Hayır		1 2 3 4 5
16. Aileniz dışındaki kişiler tarafından duygusal ihmale uğrama (örneğin komşular, arkadaşlar, üvey ana baba öğretmenler)	Evet Hayır		1 2 3 4 5
17. Ana baba ya da kardeşleriniz tarafından duygusal tacize uğrama (örneğin küçük düşürülme, alay edilme, aşağılayıcı isim takılması, sözle tehdit edilme, haksız yere ceza verilmesi)	Evet Hayır		1 2 3 4 5
18. Diğer aile bireyleriniz (örneğin amca, dayı, teyze, hala, yeğen, büyükanne ve büyükbaba) tarafından duygusal istismara uğrama (örneğin küçük düşürülme, alay edilme, aşağılayıcı isim takılması, sözle tehdit edilme, haksız yere ceza verilmesi)	Evet Hayır		1 2 3 4 5
19. Aileniz dışındaki kişiler (örneğin komşular, arkadaşlar, üvey ana baba öğretmenler) tarafından duygusal istismara uğrama (örneğin küçük düşürülme, alay edilme, aşağılayıcı isim takılması, sözle tehdit edilme, haksız yere ceza verilmesi)	Evet Hayır		1 2 3 4 5
20. Ana baba ya da kardeşleriniz tarafından fiziksel istismara uğrama (örneğin, size vurulması, eziyet edilmesi ya da yaralanmanız)	Evet Hayır		1 2 3 4 5
21. Diğer aile bireyleriniz (örneğin amca, dayı, teyze, hala, yeğen, büyükanne ve büyükbaba) tarafından fiziksel istismara uğrama (örneğin, size vurulması, eziyet edilmesi ya da yaralanmanız)	Evet Hayır		1 2 3 4 5

	Başınıza geldi mi?	**Kaç yaşında?**	**Etkilenme?**
22. Aileniz dışındaki kişiler (örneğin komşular, arkadaşlar, üvey ana baba öğretmenler) tarafından fiziksel istismara uğrama (örneğin, size vurulması, eziyet edilmesi, ya da yaralanmanız)	Evet Hayır		1 2 3 4 5
23. Size çok ağır cezalar verilmesi	Evet Hayır		1 2 3 4 5
Cevabınız evet ise bu nasıl bir cezaydı, açıklayınız.			
24. Ana baba ya da kardeşleriniz tarafından cinsel tacize uğrama (bedensel temas ya da dokunma OLMAKSIZIN cinsel davranışlarda bulunulması)	Evet Hayır		1 2 3 4 5
25. Diğer aile bireyleriniz (örneğin amca, dayı, teyze, hala, yeğen, büyükanne ve büyükbaba) tarafından cinsel tacize uğrama (bedensel temas ya da dokunma OLMAKSIZIN cinsel davranışlarda bulunulması)	Evet Hayır		1 2 3 4 5
26. Aileniz dışındaki kişiler (örneğin komşular, arkadaşlar, üvey ana baba öğretmenler) tarafından cinsel tacize uğrama (bedensel temas ya da dokunma OLMAKSIZIN cinsel davranışlarda bulunulması)	Evet Hayır		1 2 3 4 5
27. Ana baba ya da kardeşler tarafından cinsel istismara uğrama (bedensel temas ya da dokunmanın olduğu istenmeyen cinsel davranışlar)	Evet Hayır		1 2 3 4 5
28. Diğer aile bireyleriniz (örneğin amca, dayı, teyze, hala, yeğen, büyükanne ve büyükbaba) tarafından cinsel istismara uğrama (bedensel temasa da dokunmanın olduğu istenmeyen cinsel davranışlar)	Evet Hayır		1 2 3 4 5

	Başınıza geldi mi?	**Kaç yaşında?**	**Etkilenme?**
29. Aileniz dışındaki kişiler (örneğin komşular, arkadaşlar, öğretmenler) tarafından cinsel istismara uğrama (bedensel temas ya da dokunmanın olduğu istenmeyen cinsel davranışlar	Evet Hayır		1 2 3 4 5
30. Sizi etkilemiş olan BAŞKA travma (ileri derecede üzücü olay) yaşantınız varsa onları da belirtiniz.			
31. 1 ve 29 arasındaki sorulardan herhangi birine EVET cevabı verdiyseniz, söz konusu olaydan sonra ne kadar destek gördünüz? (Sorunun numarasını ve desteğin düzeyini belirtiniz)	Soru numarası	Destek (0= Yok, 1= Biraz, 2= Çok)	

Appendix D

Toronto Alexithymia Scale (TAS-20)

(In Turkish)

Toronto Aleksitimi Ölçeği (TAÖ-20)

Lütfen aşağıdaki maddelerin sizi ne ölçüde tanımladığını işaretleyiniz.

Hiçbir zaman (1) ..... Her zaman (5) olacak şekilde bu maddelere puan veriniz.

	Hiçbir zaman	**Nadiren**	**Bazen**	**Sık sık**	**Her zaman**
1. Ne hissettiğimi çoğu kez tam olarak bilemem.	1	2	3	4	5
2. Duygularım için uygun kelimeleri bulmak benim için zordur.	1	2	3	4	5
3. Bedenimde doktorların dahi anlamadığı hisler oluyor.	1	2	3	4	5
4. Duygularımı kolayca tarif edebilirim.	1	2	3	4	5
5. Sorunları yalnızca tarif etmektense onları çözümlemeyi yeğlerim.	1	2	3	4	5
6. Keyfim kaçtığında, üzgün mü, korkmuş mu yoksa kızgın mı olduğumu bilemem.	1	2	3	4	5
7. Bedenimdeki hisler kafamı karıştırır.	1	2	3	4	5
8. Neden öyle sonuçlandığını anlamaya çalışmaksızın, işleri oluruna bırakmayı yeğlerim.	1	2	3	4	5

	Hiçbir zaman	**Nadiren**	**Bazen**	**Sık sık**	**Her zaman**
9. Tam olarak tanımlayamadığım duygularım var.	1	2	3	4	5
10. İnsanların duygularını tanıması gerekir.	1	2	3	4	5
11. İnsanlar hakkında ne hissettiğimi tarif etmek bana zor geliyor.	1	2	3	4	5
12. İnsanlar duygularımı kolayca tarif etmemi isterler.	1	2	3	4	5
13. İçimde ne olup bittiğini bilmiyorum.	1	2	3	4	5
14. Çoğu zaman neden kızgın olduğumu bilmem.	1	2	3	4	5
15. İnsanlarla, duygularından çok günlük uğraşları hakkında konuşmayı yeğlerim.	1	2	3	4	5
16. Psikolojik dramalar yerine eğlendirici programlar izlemeyi yeğlerim.	1	2	3	4	5
17. İçimdeki duyguları yakın arkadaşlarıma bile açıklamak bana zor gelir.	1	2	3	4	5
18. Sessizlik anlarında dahi, kendimi birisine yakın hissedebilirim.	1	2	3	4	5
19. Kişisel sorunlarımı çözerken duygularımı incelemeyi yararlı bulurum.	1	2	3	4	5
20. Film veya oyunlarda gizli anlamlar aramak, onlardan alınacak hazzı azaltır.	1	2	3	4	5

Appendix E

Affective Neuroscience Personality Scale (ANPS)

(In Turkish)

Afektif Sinirbilim Kişilik Ölçeği (ASKÖ)

Seçtiğiniz rakamı lütfen (○) şekilde yuvarlak içine alın ve her madde için tek şıkkı işaretleyin. Anahtar:

1. **Kesinlikle katılıyorum**
2. **Katılıyorum**
3. **Katılmıyorum**
4. **Kesinlikle katılmıyorum**

1. Kesinlikle katılıyorum 2. Katılıyorum 3. Katılmıyorum 4. Kesinlikle katılmıyorum				
1. Hemen hemen her küçük problem veya bilinmeyen ilgimi çeker	**1**	**2**	**3**	**4**
2. Beni iyi tanıyanlar benim kaygılı bir insan olduğumu söyleyebilirler.	**1**	**2**	**3**	**4**
3. Başkalarıyla ilgilenmek ve onlara bakmak için genellikle güçlü bir ihtiyaç hissederim.	**1**	**2**	**3**	**4**
4. Engellendiğimde çoğunlukla kızgın olurum.	**1**	**2**	**3**	**4**
5. Kolayca eğlendirilebilen ve bolca gülen biriyim.	**1**	**2**	**3**	**4**
6. Çoğu zaman kendimi üzgün hissederim.	**1**	**2**	**3**	**4**
7. Evrenle bir bütün olduğumu hissetmek hayatıma daha fazla anlam katar.	**1**	**2**	**3**	**4**
8. Hislerim ve duygularımın farkında olmak için çaba gösteririm.	**1**	**2**	**3**	**4**
9. Özel olayları beklemekten fazla zevk almam.	**1**	**2**	**3**	**4**
10. Çoğu zaman karar vermekte zorlanmam.	**1**	**2**	**3**	**4**
11. Bazı insanların yavru hayvanlara karşı sergiledikleri abartılı tutumları çok saçma buluyorum.	**1**	**2**	**3**	**4**
12. Eğer istediğimi elde etmekte engellenmişsem genellikle durumu olduğu gibi kabullenirim.	**1**	**2**	**3**	**4**
13. Arkadaşlarım beni muhtemelen çok ciddi biri olarak tanımlarlar.	**1**	**2**	**3**	**4**
14. Birçok insana kıyasla reddedilmekten daha az etkilenirim.	**1**	**2**	**3**	**4**
15. Hayatımın anlamı diğer canlılarla bağlantımın olduğunu hissetmekten kaynaklanmaz.	**1**	**2**	**3**	**4**
16. Zaman zaman az da olsa dedikodu yaparım.	**1**	**2**	**3**	**4**
17. Yeni deneyimleri yaşamayı beklemekten gerçekten keyif alırım	**1**	**2**	**3**	**4**
18. Çoğunlukla, fırsat kaçtıktan sonra nasıl yakalayabilirdim diye düşünürüm.	**1**	**2**	**3**	**4**
19. Çocuklarla ilgilenmek, onlara bakmak hoşuma gidiyor.	**1**	**2**	**3**	**4**

1. Kesinlikle katılıyorum 2. Katılıyorum 3. Katılmıyorum 4. Kesinlikle katılmıyorum				
20. Arkadaşlarım beni muhtemelen fevri (çabuk sinirlenen) biri olarak tanımlarlar.	**1**	**2**	**3**	**4**
21. Yapılan işi eğlenceli hale getiren biri olarak bilinirim.	**1**	**2**	**3**	**4**
22. Çoğu zaman ağlama isteği duyuyorum.	**1**	**2**	**3**	**4**
23. Genelde, yaradılışın güzelliğinden manevi bir haz alırım.	**1**	**2**	**3**	**4**
24.Müzik dinlerken bazen kendimi o kadar kaptırırım ki etrafımda olan biteni bile fark etmem.	**1**	**2**	**3**	**4**
25. Ulaşılamayacak büyük planlar yerine pratik hedefler seçmeyi tercih ederim.	**1**	**2**	**3**	**4**
26.Kendimi bir savaşçı olarak tanımlamam.	**1**	**2**	**3**	**4**
27. Hasta bir insana bakmak bana yük olur.	**1**	**2**	**3**	**4**
28.Bir şeyleri kırmak isteyecek kadar kızgın olduğum bir zaman hatırlayamıyorum.	**1**	**2**	**3**	**4**
29. İtiş kakış içeren sert oyunlar genellikle hoşuma gitmez.	**1**	**2**	**3**	**4**
30. Birçok insana kıyasla daha az üzgün hissediyorum.	**1**	**2**	**3**	**4**
31. Önemli zorlukların üstesinden gelmek için nadiren maneviyata sığınırım.	**1**	**2**	**3**	**4**
32. Her zaman doğruyu söylerim.	**1**	**2**	**3**	**4**
33. Cevabı aramak çözümü bulmak kadar zevklidir.	**1**	**2**	**3**	**4**
34. Çoğu zaman, kendimi dışarıdakilerin fark ettiğinden daha gergin hissederim.	**1**	**2**	**3**	**4**
35. Yavru hayvanların yanında olmayı severim.	**1**	**2**	**3**	**4**
36. Kızdığımda çoğu zaman içimden küfretmek gelir.	**1**	**2**	**3**	**4**
37. Genellikle iyi zamanları düşünür, mutlu olurum.	**1**	**2**	**3**	**4**
38. Çoğunlukla yalnız hissederim.	**1**	**2**	**3**	**4**

1. Kesinlikle katılıyorum 2. Katılıyorum 3. Katılmıyorum 4. Kesinlikle katılmıyorum				
39. Bütün canlılarla bir olduğumu hissetmek benim için önemli bir ilham kaynağıdır.	**1**	**2**	**3**	**4**
40. Sabun köpüğündeki renkler gibi küçük şeylerden keyif almak hoşuma gider.	**1**	**2**	**3**	**4**
41. Genellikle, hedeflerim hakkında az hevesli ve az beklentili olurum.	**1**	**2**	**3**	**4**
42. Hayatta çok az sayıda korkum vardır.	**1**	**2**	**3**	**4**
43. Çocukların etrafında olmaktan özellikle bir keyif almam.	**1**	**2**	**3**	**4**
44. Engellendiğimde nadiren sinirlenirim.	**1**	**2**	**3**	**4**
45. Saçmalığa varan esprilerden hoşlanmam.	**1**	**2**	**3**	**4**
46. Aileme çok bağlıyım.	**1**	**2**	**3**	**4**
47. Benim için maneviyat içsel huzur ve uyumu sağlayan öncelikli bir kaynak değildir.	**1**	**2**	**3**	**4**
48. Bazen içimden küfretmek gelir.	**1**	**2**	**3**	**4**
49. Bir amaç uğruna çaba sarf etmek ve sonucunu beklemekten o amaca ulaşmak kadar zevk alırım.	**1**	**2**	**3**	**4**
50. Bazen sorunlarım hakkında kaygılanmaktan kendimi alamam.	**1**	**2**	**3**	**4**
51. Genellikle başı boş kalmış hayvanlara karşı yufka yürekliyim.	**1**	**2**	**3**	**4**
52. Biri beni kızdırdığında uzun süre etkisinde kalırım.	**1**	**2**	**3**	**4**
53. Beni tanıyanlar benim eğlenceyi seven biri olduğumu söylerler.	**1**	**2**	**3**	**4**
54. Çoğu zaman, sevmiş olduğum, artık yanımda olmayan insanlar hakkında düşünürüm.	**1**	**2**	**3**	**4**
55. Manevi konular üstünde yoğunlaşmak genellikle içimde güçlü bir hayranlık (duygu seli) ve imkânların sonsuzluğu hissini uyandırır.	**1**	**2**	**3**	**4**

1. Kesinlikle katılıyorum 2. Katılıyorum 3. <u>Katılmıyorum</u> 4. Kesinlikle <u>katılmıyorum</u>				
56. Kendimi hiç şiir yazarak ifade etmeyi denemedim.	**1**	**2**	**3**	**4**
57. Genellikle sadece çözmüş olmak için problem veya bilinmeyenleri çözmekle ilgilenmem.	**1**	**2**	**3**	**4**
58. Arkadaşlarım benim cesur olduğumu ve beni korkutmanın zor olduğunu söyler.	**1**	**2**	**3**	**4**
59. Genelde evde hayvan beslemenin, değdiğinden daha fazla sorun çıkardığını düşünürüm.	**1**	**2**	**3**	**4**
60. Beni iyi tanıyanlar benim neredeyse hiç kızmadığımı söyler.	**1**	**2**	**3**	**4**
61. Şakalaşmaktan özellikle bir keyif duymam.	**1**	**2**	**3**	**4**
62. Arkadaşlarımın veya ailemin beni onaylamaması beni özellikle üzmez.	**1**	**2**	**3**	**4**
63. Hayatımın anlam ve amacını manevi değerlerim belirlemez.	**1**	**2**	**3**	**4**
64. Bir şeyden kaçmak için hiç hasta rolü yapmadım.	**1**	**2**	**3**	**4**
65. Meraklılığım beni bazen başkalarının boşa harcanan zaman olarak nitelendirdiği şeyleri yapmaya iter.	**1**	**2**	**3**	**4**
66. Çoğu zaman gelecek hakkında kaygılanırım.	**1**	**2**	**3**	**4**
67. Evsizler için üzülürüm.	**1**	**2**	**3**	**4**
68. Birisi yapmak istediğim şeyi yapmama engel olmaya çalışırsa rahatsız olurum.	**1**	**2**	**3**	**4**
69. Çoğu zaman mutluluk duyarım.	**1**	**2**	**3**	**4**
70. Sık sık sevdiğim kişileri kaybettiğimi düşünürüm.	**1**	**2**	**3**	**4**
71. İnsanlığın bir parçası olduğumu hissetmek beni daha etik seçimler yapmaya iter.	**1**	**2**	**3**	**4**
72. Şiirsel bir dil veya süslü hitap beni özellikle etkilemez.	**1**	**2**	**3**	**4**
73. Çıkıp yeni şeyler keşfetme ihtiyacını nadiren duyarım.	**1**	**2**	**3**	**4**

1. Kesinlikle katılıyorum 2. Katılıyorum 3. <u>Katılmıyorum</u> 4. Kesinlikle <u>katılmıyorum</u>				
74. Bende kaygı uyandıran çok az şey vardır.	**1**	**2**	**3**	**4**
75. Başkalarının bana ihtiyaç duyduğunu hissetmek hoşuma gitmez.	**1**	**2**	**3**	**4**
76. Birisine vurmayı isteyecek kadar nadiren kızarım.	**1**	**2**	**3**	**4**
77. Bir çok insanın komik bulduğu şeyler genelde bana komik gelmez.	**1**	**2**	**3**	**4**
78. Arkadaşlarımdan uzağa gitmek beni üzmez.	**1**	**2**	**3**	**4**
79. Koyduğum hedefler manevi değerlerimden etkilenmez.	**1**	**2**	**3**	**4**
80. Hayatımda karanlıktan korktuğum zamanlar olmuştur.	**1**	**2**	**3**	**4**
81. Yeni bir ortama girdiğimde, hep etrafımı incelemekten ve daha iyi tanımaktan hoşlanırım.	**1**	**2**	**3**	**4**
82. Çoğunlukla "Doğru kararı veriyor muyum?" diye kaygılanırım.	**1**	**2**	**3**	**4**
83. Sık sık başkalarını iyi hissettirecek ufak tefek şeyler yaparım.	**1**	**2**	**3**	**4**
84. Olaylar istediğim gibi gelişmeyince bazen içimden bir şeylere tekme atmak veya vurmak gelir.	**1**	**2**	**3**	**4**
85. Fiziksel temas içerenler dâhil her türlü oyundan zevk alırım.	**1**	**2**	**3**	**4**
86. Arkadaşlarımla olamadığım zamanlar çoğunlukla sıkkın ve bunalmış hissederim.	**1**	**2**	**3**	**4**
87.Manevi değerler sınırlarımı aşmama yardımcı olur.	**1**	**2**	**3**	**4**
88.Bir film ya da benzeri bir şey izlerken kendimi o kadar kaptırıyorum ki sanki onun bir parçasıymışım gibi hissediyorum.	**1**	**2**	**3**	**4**
89. Sorunları irdeleyip inceleyen biri değilim.	**1**	**2**	**3**	**4**
90. Geleceğim hakkında nadiren endişelenirim.	**1**	**2**	**3**	**4**
91. İnsanların benimle duygusal yakınlık kurmalarını özellikle istemem.	**1**	**2**	**3**	**4**
92. Birine bağırmak isteyecek kadar kızgın hale genellikle hiç gelmem.	**1**	**2**	**3**	**4**
93. Sadece eğlencesi için oynanan ve açık bir kazananı olmayan oyunlardan daha az zevk alırım.	**1**	**2**	**3**	**4**

1. Kesinlikle katılıyorum 2. Katılıyorum 3. Katılmıyorum 4. Kesinlikle katılmıyorum				
94. Kaybettiğim insanları ve ilişkileri nadiren düşünürüm.	**1**	**2**	**3**	**4**
95. "İnsanlara, onların istediği gibi davran" sözü benim hayat görüşüme uymaz.	**1**	**2**	**3**	**4**
96. Kasten hiç yalan söylemedim.	**1**	**2**	**3**	**4**
97. Çoğu zaman sanki her şeyi başarabilirmişim gibi hissederim.	**1**	**2**	**3**	**4**
98. Çoğu zaman sinirli hissederim ve gevşemekte güçlük çekerim.	**1**	**2**	**3**	**4**
99. Başkalarının kayıplarının acılarını çok güçlü bir şekilde hissedebilen bir insanım.	**1**	**2**	**3**	**4**
100. Bazen, insanların çevirdiği dolambaçlı işler gerçekten sinirlerime dokunur.	**1**	**2**	**3**	**4**
101. Hayatı, eğlenmek için fırsatlarla dolu olarak görürüm.	**1**	**2**	**3**	**4**
102. Hüznü ve kayıp acısını güçlü hisseden biriyim.	**1**	**2**	**3**	**4**
103. Bazen müzik dinlerken tüylerim diken diken olur, ürperirim.	**1**	**2**	**3**	**4**
104. Çoğu zaman hayat anlamsız gelir.	**1**	**2**	**3**	**4**
105. Aşırı derecede irdeleyici (araştırıcı) biri değilim.	**1**	**2**	**3**	**4**
106. Genellikle bir şeyler hakkında kaygılanmaktan dolayı uykusuzluk çekmem.	**1**	**2**	**3**	**4**
107. Pek şefkatli değilim.	**1**	**2**	**3**	**4**
108. İnsanlar beni sinirlendirdiğinde onlara kötü şeyler söyleme ihtiyacını nadiren duyarım.	**1**	**2**	**3**	**4**
109. Başkalarıyla birlikte oyunlar oynamak benim için özellikle keyif veren bir şey değildir.	**1**	**2**	**3**	**4**
110. Başkalarıyla iletişim kurmaktan hemen hemen her zaman mutlu olurum.	**1**	**2**	**3**	**4**

ETİK KURUL DEĞERLENDİRME SONUCU/RESULT OF EVALUATION BY THE ETHICS COMMITTEE

(Bu bölüm İstanbul Bilgi Üniversitesi İnsan Araştırmaları Etik Kurul tarafından doldurulacaktır /This section to be completed by the Committee on Ethics in research on Humans)

Başvuru Sahibi / Applicant: Selma Çoban

Proje Başlığı / Project Title: The role of trauma, basic affective features, and the ability to understand and express emotions in irratable bowel syndrome

Proje No. / Project Number: 2018-20024-11

1.	Herhangi bir değişikliğe gerek yoktur / There is no need for revision	XX
2.	Ret/ Application Rejected Reddin gerekçesi / Reason for Rejection	

Değerlendirme Tarihi / Date of Evaluation: 19 Ocak 2018

Kurul Başkanı / Committee Chair

Doç. Dr. Itır Erhart

Üye / Committee Member

Prof. Dr. Aslı Tunç

Üye / Committee Member

Prof. Dr. Hale Bolak

Üye / Committee Member

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Prof. Dr. Koray Akay

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Doç Dr. Ayhan Özgür Toy