THE CONTRIBUTION OF SELF-CONTROL, EMOTION REGULATION, RUMINATION, AND GENDER TO TEST ANXIETY OF UNIVERSITY STUDENTS

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ABSTRACT

THE CONTRIBUTION OF SELF-CONTROL, EMOTION REGULATION, RUMINATION, AND GENDER TO TEST ANXIETY OF UNIVERSITY STUDENTS

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The purpose of the present study is to examine the relationship between gender, self-control, emotion regulation, rumination and test anxiety. In other words, the study aimed at investigating how well each of the mentioned independent variables contributes to explain variance of test anxiety.

The participants (*N=188*) were reached by convenient sampling procedure. The sample consisted of preparatory students studying in a private university in Ankara. Data were collected by a demographic form and four scales as Test Anxiety Inventory (Spielberger, 1980), Self-Control Scale (Tangney, Baumeister, & Boone, 2004), Emotion Regulation Questionnaire (Gross & John, 2003), and Ruminative Response Scale (Treynor, Gonzalez, & Nolen-Hoeksema, 2003).

For this study, hierarchical multiple regression analysis was utilized to examine the data. The results revealed that gender, self-control, two emotion regulation strategies (cognitive reappraisal and suppression) and also brooding as a ruminative response significantly correlated to test anxiety of university students. Furthermore, self-control and cognitive reappraisal were found to be correlated with test anxiety stronger than the other independent variables. Reflection as another ruminative response was not found to be correlating with test anxiety within the suggested model. The findings obtained from the present study are discussed with regards to the related literature, and conclusions were drawn accordingly.

Keywords: Test anxiety, gender, self-control, emotion regulation, rumination.

ÖZ

ÖZDENETİM, DUYGU YÖNETİMİ, RUMİNASYON
VE CİNSİYETİN ÜNİVERSİTE ÖĞRENCİLERİNİN
SINAV KAYGILARINA KATKISI

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Bu çalışmanın amacı toplumsal cinsiyet, özdenetim, duygu yönetimi, ruminasyon değişkenlerinin sınav kaygısı ile olan ilişkisini incelemektir. Bu çalışma, özellikle, bu değişkenlerin üniversite hazırlık seviyesindeki öğrencilerin sınav kaygılarını yordamadaki rolünü araştırmayı hedeflemektedir.

Katılımcılara (*N=188*) kolayda örnekleme yöntemi ile ulaşılmıştır. Örneklem Ankara ilinde özel bir üniversitede okuyan hazırlık sınıfı öğrencilerinden oluşmaktadır. Elde edilen veriler demografik form ve dört farklı ölçek ile toplanmıştır. Bu ölçekler Sınav Kaygısı Envanteri (Spielberger, 1980), Özdenetim Ölçeği (Tangney, Baumeister, & Boone, 2004), Duygu Yönetimi Ölçeği (Gross & John, 2003) ve Ruminatif Tepki Ölçeği'dir (Treynor, Gonzalez, & Nolen-Hoeksema, 2003).

Bu çalışma için, değişkenler arasındaki görece ilişki hiyerarşik çoklu regrasyon yoluyla incelenmiştir. Sonuçlar, cinsiyet, özdenetim, duygu yönetileri olarak bilişsel yeniden değerlendirme ve baskılama ve ruminatif tepki olarak düşüncelere dalmanın üniversite öğrencilerinin sınav kaygılarını anlamlı şekilde yordadığını göstermiştir. Bunun yanısıra, özdenetim ve bilişsel yeniden değerlendirmenin diğer bağımsız değişkenlere kıyasla sınav kaygısı ile daha yüksek derecede ilişkili olduğu bulunmuştur. Diğer bir ruminative tepki olan yansıtmanın ise öngörülen model içerisinde sınav kaygısı ile anlamlı ilişkisinin olmadığı bulunmuştur. Bu çalışmadan elde edilen bulgular ilgili alan yazın ışığında tartışılmıştır.

Anahtar Kelimeler: Sınav kaygısı, toplumsal cinsiyet, özdenetim, duygu yönetimi, ruminasyon.

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INTRODUCTION

1.1. Background of the Study

In today's societies, tests are considered as the most common assessment instruments of achievement and performance. Within the school years as well as after the formal education, individuals take many tests and these tests are of capital importance in individuals' lives both in academic settings and also important through their careers. The prominence of tests can be seen in many areas of individuals' lives, ranging from specifying one's ability on a certain task to admission to college. It is very probable that the tests would be even more important in the future both for the individuals who look for a job and for candidates of educational institutions. As Yıldırım, Gençtanırım, Yalçın and Baydan (2008) mention high stakes, which are exams that have important consequences for people, have significant implications in shaping their lives and future. It is when such tests are likely to affect individuals' career choices and future opportunities that they are most stressful (Peleg-Popko, 2004). Zeidner (1998) also mentions that since the tests have an increasing importance for the individuals in modern society and the long term consequences of these tests may cause remarkable problems in educational, social, and clinical settings it is not surprising that the prominence of test anxiety increases each day. Hembree

(1988) states that more than 20% of the college students experience test anxiety whereas a study by Cassady (2010) shows that up to 40% of the students in general tend to have that kind of anxiety. It is so much rooted in people's lives that Akca (2011) referred a life without anxiety as utopian in today's world.

Since the tests are determinant factors in people's lives and they are commonly used for evaluating the academic performance, it is useful as well as necessary to help people do well in the tests. Dodeen (2009) states that in order to achieve this goal it might be a good start to study test-related factors of characteristics. It has been known that the ability of the individuals is only one aspect that affects the performance of them on tests. Apart from their ability, test anxiety can be regarded as another influencing factor. In order to deal with test anxiety, what is meant by this concept needs to be specified. Although there are a plenty of definitions of test anxiety, the definitions mainly focus on its intense emotional nature. Dusek (1980) points out the unpleasant emotional characteristic of that experience in addition to its physiological and behavioral outcomes. Similarly, Hancock (2001) emphasizes its negative aspect and defines test anxiety as a motivation for the individual to react to threatening situations in a debilitating way. Moreover, Austin , Partridge, Bitner, and Wadlington (1995) refer that state as "the feeling of tension and anxiety that interferes with the ability to communicate what one knows in a test situation" (p.10). In common, test anxiety is accompanied by high levels of stress, nervousness, apprehension and these experiences are believed to affect test performance as well as emotional and behavioral well-being (Cizek & Burg, 2006).

Different classifications have been made so as to explain anxiety. One of these classifications divides anxiety into three types as trait anxiety, situation-specific anxiety, and state anxiety. Trait anxiety refers to the type of anxiety which is a personal ongoing characteristic and it is not likely to depend on any settings or situations (Cizek & Burg, 2006). Unlike other kinds of anxiety, it is generally associated with anxiety disorder (Birjandi & Alemi, 2010) and it is applicable to a wide range of situations (Horwitz, Tallon, & Luo, 2010). Situation-specific anxiety, on the other hand, is experienced when triggered by a specific type of situation or specific events. Similar to trait anxiety, this kind of anxiety can be considered as stable. Lastly, state anxiety is aroused as a response to a definite situation which is a potential frightening stressor (Birjandi & Alemi, 2010). Test anxiety is mostly regarded as an example of state anxiety (Cizek & Burg, 2006; Cassady, 2010; Salend, 2011) although it is sometimes placed under the heading of situation-specific anxiety (Horwitz, Tallon, & Luo, 2010). Yet, it slightly differs from situation-specific anxieties in that test anxiety is not necessarily experienced every time individual takes a test but rather what meaning that individual attributes to a specific test determines whether test anxiety is experienced or not.

The literature also distinguishes debilitating and facilitating test anxieties. Simpson, Parker, and Harrison (1995) examined anxiety in general and mentioned that the amount of anxiety experienced specifies its impact. They stated that a minimal amount of anxiety can be characterized as facilitating

whereas excessive amount of anxiety needs to be regarded as debilitating. They also claimed that facilitating anxiety may help the individual to act effectively and rapidly while debilitating anxiety rather immobilizes the individual or at least causes one to respond poorly. Cizek and Burg (2006) makes the same differentiation about test anxiety and state that appropriate level of test anxiety can mobilize motivation, memory, and also attention, which would consequently help the individual to perform well in the test setting. In the literature it is also possible to come across studies that signify this difference. For instance, Zeidner and Matthew (2005) as well as Schunk, Pintrich, and Meece (2008) conducted studies that highlight the adaptive characteristic of test anxiety. On the contrary, the studies which support its debilitating nature predominate (Sarason & Stoops, 1978; Sarason, 1981; McKeachie, 1984; Keogh & French, 2001). The literature also provides many other studies that display the negative effect of test anxiety. For instance, concentration, well-being, academic performance, and even physical and mental health are found to be negatively influenced by this kind of anxiety.

Another attempt to interpret test anxiety is made by dividing it into subcomponents. A test anxious person might experience feelings in two dimensions. These are worry, which is the cognitive one, and emotionality, which is the physiological one. The former refers to negative thoughts, evaluations or inner talks about one's inefficacy whereas the latter is the autonomous stimulation of the nervous system that may appear in the form of rapid heartbeat, sweating, chill, sickness, nervousness or tension (Öner, 1990).

Including the components of worry and emotionality, it can be said that test anxiety is a state that has physiological, psychological, cognitive, and behavioral aspects. Among those, it is claimed that cognitive domain is the one which has the most prominent influence on the causes and the nature of test anxiety (Bedell & Marlowe, 1995).

As mentioned before, how the individual attends his/her attraction to the test situation or how the test is evaluated by the individual creates, increases, or decreases test anxiety. As well as the test situation, how one believes his/her potential to do well in that test situation is also affects the level of test anxiety (Spielberger & Sarason, 1989; Putwain, Woods, & Symes, 2010). Besides, the way people perceive a test highly depends on their cumulative histories, their perception of themselves (Davis, DiStefano, and Schutz, 2008), and their goals (Schutz & Davis, 2000). In this regard, the attentional theory for test anxiety comes into prominence. Within attentional theory, cognitive elements have an important place in test anxiety (Gregor, 2005) and not only whether the individual attaches importance to the test or not but also where he/she directs his/her attention matters.

Together with test anxiety, there are many other factors that may influence individuals' test performance and also well-being. Considering the related literature, it can be inferred that some of the mainly influencing factors might be gender, test-taking situation, self-control, individuals' beliefs or attitude towards tests in general or towards a specific test, social support, emotion regulation

strategies, or rumination. Some of the mentioned factors, which are self-control, emotion regulation, and rumination, are found to be closely related with test anxiety as well. Additionally, gender seems to be a factor that interacts with each of these factors significantly, including test anxiety. However, the literature shows very different results about gender, which places question marks in mind.

Self-control, being one of the most influential factors on test anxiety, has been investigated within many different disciplines. The effects of self-control, which is adaptive in nature, can be seen on the psychology of the individuals, their social experiences as well as on their academic performance (Finkel & Campell, 2001; Mischel & Ayduk, 2004; Tangney, Baumeister, & Boone, 2004). Self-control, also called as self-regulation in psychology, is a conscious and mostly goal-directed process which requires the ability to control impulses, behaviors, and even emotions. Although there are a plenty of definitions of self-control, it is largely agreed that it refers to the capacity of the self to inhibit, override or alter the automatic or dominant responses in order to prevent them from interfering with the goals which are mostly long-term (Kanfer & Karoly, 1972; Carver & Scheier, 1981; Bandura, 1989; Vohs & Baumeister, 2004a). Long-term goals play a significant role in the process of controlling and adapting self (Schunk & Ertmer, 1999; Zimmerman, 2005) and it is claimed that long-term goals dominate even when the short-term goals are at cross-purposes (Hayle, 2010; Magen & Gross, 2010). Taking several definitions of self-control and the factors that influence it, the way Ridder, Lensvelt-Mulders, Finkenauer, Stok, and Baumeister (2012) put them together seems both helpful and comprehensible.

They refer self-control as a conscious and effortful process which is motivating desirable behaviors whereas inhibiting the opposites as well as contributing to a wide range of behaviors and consequently affecting the actual behaviors.

The concept of self-control can also be interpreted by the classification of the phase it takes place. According to this classification, self-control can take place in any of the three phases as forethought, performance or volitational control, or self-reflection (Schutz & Davis, 2000; Zimmerman, 2005). In the first phase, the individual attempts to control the motivations that lead his / her behaviors or responses. Controlling these motives would subsequently have implications on the next phase. In this next phase, which is the performance or volitational control phase, it is the actions or the attention which is attracted on the emotion, impulse, or thought that are controlled by the individual. The last one is the self-reflection phase. In this phase, the individual tries to control his / her responses once they are performed. Apart from the phases, the setting in which the individual lives is also specifies the way he/she controls his/her responses or cognitions. As the social, personal and environmental circumstances of the individuals change, they need to alter themselves accordingly and the self-control process which is affected by the interaction between these changing circumstances is characterized as cyclical (Bandura, 1986; Schutz & Davis, 2000; Zimmerman, 2005).

As mentioned, the process of self-control affects and is affected by the changes in several settings, thus it can be said that there are a wide range of actions,

situations and experiences that interact with it. Self-control has a remarkable influence on personal experiences and social life of the people. These influences start being prominent for one since the first years of the education and seems to last for a life time. One of the most prominent examples of this influence is on academic performance (Pintrich, Smith, Garcia, & McKeachie, 1993; Bembenutty, McKeachie, Karabenick, & Lin, 1998; Pintrich, 2000; Tangney et al., 2004; Zimmerman, 2005) since it helps the people to focus on the task, manage resources effectively and also ease academic stress (Gintner, West, & Zarski, 1989; Akgun & Ciarrochi, 2003). Not only academic but also occupational achievements are claimed to be affected positively by self-control (Muraven, Tice, & Baumeister, 1998; Tangney, Baumeister, & Boone, 2004). Within the social life of the people, interpersonal and close relationships can be regarded as the experiences which are also positively influenced by self-control, moreover it is found that self-control also enhances well-being (Mischel, Shoda, & Peake, 1988; Shoda, Mischel, & Peake, 1990; Finkel & Campell, 2001; Tangney et al., 2004). Therefore, it can be inferred that being able to regulate thoughts, emotions and impulses when necessary is likely to help the individual to manage relationships. Furthermore, self-control has constructive contributions not only in social contexts but also to psychopathology, substance abuse, eating disorders, aggression and deviant behaviors (Vazsonyi, Pickering, Junger, & Hessing, 2001; Tangney et al., 2004).

Another domain on which self-control has constructive contributions is test anxiety. Although how the test is assessed by the individual has a moderating

effect, test anxiety and self-control has a negative correlation in general terms. In other words, studies show that the individuals who have low levels of self-control tend to experience higher levels of test anxiety compared to those with high level of self-control (Hembree, 1988; Brackney & Karabenick, 1995; Bembenutty et al., 1998). Yet, no significant difference could be observed between those who experience low and high levels of test anxiety when the individuals perceive the test as easy. Another factor that has a moderating effect similar to the perception of the test is the characteristics of the individuals (Bembenutty et al., 1998). In addition, whether self-regulatory strategies are used or not also relates to experience of test anxiety (Brackney & Karabenick, 1995).

A similar concept that has a significant relationship with test anxiety is emotion regulation. Emotion regulation is a component of self-regulation, as is self-control. Yet, although emotions are mentioned also in self-control, it is not the emotions but the responses and behaviors which are urged by those emotions that are regulated. To the contrary, in emotion regulation, individuals consciously or unconsciously attempt to regulate emotions themselves. Both of them, actually, aim at regulating the self with regards to the long-term goals, however what they regulate differs. What is actually meant by emotion regulation is "the processes by which individuals influence which emotions they have, when they have them, and how they experience an express these emotions" (Gross, 1998, p.275). Thompson (1994, p. 27-28) defines emotion regulation in a similar but more comprehensive way as "extrinsic and intrinsic processes responsible for monitoring, evaluating, and modifying emotional reactions,

especially their intensive and temporal features, to accomplish one's goals." As it consists of not only extrinsic but also intrinsic processes, it is inevitable that individual differences occur in the experience of regulating emotions. Individuals might differ in the emotion regulation strategies they use, the goals they have and also the exact time they consciously or unconsciously regulate their emotions. These differences would also affect how well and how effectively they regulate their emotions since emotion regulation may not work in the same extent for every person just as it might not be adaptive for everyone. One of the most determinative factors of this difference is the phase the individual attempts to regulate his/her emotions. The phase in which one regulates his/her emotions also affects the emotion regulation strategy that is used, since according to the time they are regulated the strategy might be either antecedent-focused or response-focused (Gross, 1998; Gross & John, 2003; Gross, Srivastava, McGonigal, Tamir, & John, 2009; Magen & Gross, 2010). If the emotions are regulated before they are expressed or even fully-experienced, they are called antecedent-focused since the experience is rather intrinsic. On the other hand, when emotion expressive behavior rather than the experience of emotion is regulated it is qualified as response-focused since this time the experience is rather extrinsic. Gross and Thompson (2007) suggest a modal model to interpret the emergence of emotions, which is necessary for comprehending both emotions and emotion regulation process. According to their "modal model", first there is the situation initial motive for the emotion. Yet, the situation is not sufficient for the emotion to emerge since the individual needs to attend to that situation and subsequently appraise it. The appraisal of the

individual, finally, creates the response which takes the form of emotion. Thus, whether the individual attempts to regulate his/her emotions during the situation phase, attention phase, appraisal phase, or the response phase determines the type of emotion regulation strategy.

Another model by Gross (1998), called as process model of emotion regulation, explains the way emotions are regulated. In accordance with his model, at the very first point the emotion can be regulated by selecting the situation, in other words by avoiding it. Another way that might be chosen in the situation phase is modifying the situation in a way that affects the experience of the emotion. In the next phase where the individual attends to the situation, he/she may alter the way of attending it by shifting his/her attention to another aspect of the situation or by totally shifting the attention away from it. The individual may also regulate his/her emotions once the situation is attended, in this phase one may change the way of appraising the situation thus altering how it is interpreted. The last phase one can regulate emotions is when the response is being given. In this phase, one may attempt to change the way he/she responses to that particular situation.

In which phase the emotion is regulated, as mentioned before, determines the emotion regulation strategy that is utilized. For the present study, two of these strategies which are cognitive reappraisal and suppression are addressed. There are mainly three reasons behind the choice of these two specific emotion regulation strategies. First of all, they are among the most commonly used emotion regulation strategies in everyday life (John & Gross, 2004). Secondly,

the difference between these two strategies shows the difference between antecedent-focused and response-focused strategies. Cognitive reappraisal, which emerges in the appraisal phase of the emotion process, is antecedent-focused whereas suppression, which is used in the response phase of the emotion-generative process, is response-focused. Finally, many researchers in the field of emotion regulation preferred to study these two strategies (Stepper & Strack, 1993; Gross & Levenson, 1997; Gross & John, 2003; John & Gross, 2004; Evers, Stok, & Ridder, 2010), hence the results of these studies provide the necessary basis to make predictions for the present study. In cognitive reappraisal, which is rather adaptive, the situation that causes emotion is reevaluated so as to reduce its emotional impact (Gross, 2001), whereas in suppression, which is rather maladaptive, the emotional expressive behavior is inhibited once the emotion is aroused (Gross & Levenson, 1993; Gross, 1998).

Due to the differences between the characteristics and adaptability of the two emotion regulation strategies, the effects of them on several domains also show significant differences. For instance, the experience of negative emotion tends to decrease when the individual cognitively reappraises the situation however the negative emotion does not reduce when suppression is utilized. Yet, there are studies which reveal the fact that it is rather the positive emotional experience than the negative one that is reduced by the use of suppression (Gross & Levenson, 1993; Stepper & Strack, 1993; Gross & Thompson, 2007). Moreover, suppression is found to cause an impairment in memory whereas cognitive reappraisal is not likely to have such a consequence (Gross, 2001; Gross John,

2003; John & Gross, 2004). These two emotion regulation strategies are claimed to have differing effects on physiological, psychological, and social functioning (Gross John, 2003; John & Gross, 2004). For instance, suppression is found to cause physiological problems whereas reappraisal does not (Gross John, 2003). A similar negative effect of suppression is claimed to be on social closeness as well as social support (Rime, Philippot, Boca, & Mesquita, 1992; Gross, 2001; John & Gross, 2004). On the contrary, cognitive reappraisers are found to be more likely to experience social support, social closeness and close relationships, which displays the more adaptive nature of cognitive reappraisal (John & Gross, 2004).

In general terms, emotion regulation strategies can be utilized in any phase of test anxiety since how the individual interprets the test and the test-taking situation is closely related to the anxiety they experience (Martin & Dahlen, 2005; Amstadter, 2008). In this aspect, when cognitive reappraisal is used as a coping strategy, individuals are less likely to experience test anxiety compared to those who utilize suppression (Spielberger & Vagg, 1995; Schutz & Davis, 2000; Davis, Stefano, & Schutz, 2008). Since, when the test-taking situation or the test itself is reevaluated as somewhat important rather than extremely important and when the individual reassesses him/herself as capable of the test, test anxiety is found to be reduced (Schutz & Davis, 2000; Zlomke & Hahn, 2010). In other words, as Smith (1991) stated, when one appraises him/herself as incapable of managing the test, he/she tends to experience test anxiety. All in all, it can be inferred that the use emotion regulation strategies, particularly cognitive

reappraisal decreases the level of test anxiety experienced by the individual. Yet, it is also important state that not accidental but conscious selection of emotion regulation strategy and the effective practice of it are necessary.

Rumination, which is mostly regarded as a maladaptive coping style, is another factor that remarkably interacts with test anxiety. It can be defined as a vicious circle which activates negative memory about a specific situation and prevents the person from taking action (Nolen-Hoeksema, 1987). It is characterized as a vicious circle since the individual is likely to experience negative emotions as long as he/she focuses on the situation which evokes negative mood. The repetitive and passive focus on what causes negative emotions, which is the main characteristic of rumination, may increase the negative experience of the individuals, such as depressive symptoms, negative mood, major depressive episodes, dissatisfaction by the performance of the self, or impaired problem-solving (Just & Alloy, 1997; Nolen-Hoeksema, 2000; Ward, Lyubomirsky, Sousa & Nolen-Hoeksema, 2003). Yet, the experience of those individuals is likely to depend on the types of rumination that are reflection and brooding. Reflection, which is one the ruminative responses, is a cognitive coping strategy in which the individual turns inward and brooding, which is the other ruminative response, refers to passive focusing on and thinking over one's negative mood (Treynor, Gonzalez, & Nolen-Hoeksema, 2003). While brooding, the individual tends to think overly on the negative mood and the consequences of that negative mood and this passive focus is both caused by the negative mood and also causes it to continue (Treynor et al., 2003). Brooding can also be considered as a self-

critical focus and mostly associated with maladaptive coping strategies (Burwell & Shirk, 2007). On the other hand, reflection is seen as a rather effortful attempt to gain insight about what lies beneath the negative mood or negative affect. In reflection, the individual tries to cognitively cope with the negative mood by turning inward (Treynor et al., 2003) and this type of rumination is related to more adaptive coping strategies (Surrence, Miranda, Marroquin, & Chan, 2009; Burwell & Shirk, 2007).

Although rumination is generally believed to be maladaptive, there are studies which prove the opposite by emphasizing its motivating aspect (Martin & Tesser, 1996). However, other studies claim that it is actually demotivating in nature since while ruminating, the individual is believed to focus on the gap between what he/she desires and how he/she regards him/herself. Whether the ruminative response is adaptive or maladaptive needs to be discussed with regards to which type of response it is. Since, brooding has been found not to cause any decrease in negative affect either in the short or the long term; however reflection leads to a decrease in negative affect in the long-term (Treynor et al, 2003). Moreover, those who passively focus on the negative mood tend to worsen their mood.

Rumination might be considered as one of the main producers of test anxiety (Schachter, 2007) and even a component of it, in that "worry" which is a subcomponent of test anxiety is actually focuses on self-deprecating rumination (Furlan, Cassady, & Pérez, 2009) and even defined as cognitive rumination

about academic subjects (Kieffer, Cronin, & Gawet, 2006). Despite the close link between test anxiety and rumination, the relationship between these factors has not been fully investigated. Yet, the existing studies mainly show that test anxiety is highly experienced by those who tend to ruminate (Paul & Eriksen, 1964; Sarason, Pederson, and Nyman, 1968; Wine, 1971; Hollandsworth, Glazeski, Kirkland, Jones, & Van Norman, 1978; Grant & Beck, 2010). Grant and Beck (2010) also highlighted the presence of rumination periods even following the test. Besides, ruminative responses which are irrelevant to the task are considered as distracting the concentration on the task and suggested to be dealt accordingly (Thyer, Papsdorf, Himle, McCann, Caldwell, & Wickert, 1981).

All of the variables that are the subjects of the present study show different characteristics with regards to gender. To start with, the relationship between test anxiety and gender has been investigated for so long. The results of the related studies have revealed different findings about this relationship, and most of the studies have shown that females are more likely to experience test anxiety (Hembree, 1988; Zeidner, 1990; Aydın, 1993; Aysan, Thompson & Hamarat, 2001; Hong & Karstensson, 2002; Yerin 2003). Yet, a few studies which revealed no significant relationship between test anxiety and gender can also be found in the literature (Mwamwenda, 1993; Onyeizugbo, 2010). Different results are also obtained from the studies that have investigated the relationship between gender and self-control. Generally, the studies show that females tend to have stronger and higher levels of self-control compared to males (Gottfredson &

Hirschi, 1990; Burton, Cullen, Evans, Alarid, & Dunaway, 1998; Bembenutty, 2007; Shekarkhar & Gibson, 2011; Gwyther & Holland, 2012). Although much of the related research revealed consistent results, Duckworth and Seligman (2006) cautioned the researchers against the possible discrepancy between the results of subjective and objective assessments while measuring self-control. When the relationship between gender and emotion regulation is discussed, it is also possible to reach consistent results, in that related studies mostly point out females making use of emotion regulation strategies more than males (Garnefski, Teerds, Kraaij, Legerstee, & Kommer, 2003). Moreover, they are found to be utilizing more strategies in number (Nolen-Hoeksema & Aldao, 2011). Nevertheless, Khodarahimi, Hashimah, and Mohd-Zaharim (2011) found males to be utilizing cognitive reappraisal as an emotion regulation strategy more than the females. Similar to the results in emotion regulation, also in rumination females tend to use strategies more both in number (Nolen-Hoeksema, 1991) and also in frequency (Nolen-Hoeksema, Morrow, & Fredrickson, 1993; Nolen-Hoeksema, Larson, & Grayson, 1999) compared to males.

So far, research studies were conducted so as to examine test anxiety experienced by individuals with regards to different ages and gender, self-control related to a wide range of disciplines, emotion regulation strategies with respect to their adaptive and maladaptive characteristics and rumination that both causes and is caused by negative mood. Thus, in the literature studies that evidenced the relationship of (a) self-control with test anxiety, (b) emotion regulation strategies with test anxiety, (c) ruminative response styles with test anxiety, and (d) gender

with test anxiety are available. In the present study, the major aim is to bring these variables together and to examine the relationship between self-control, emotion regulation, rumination, and gender in the same equation in order to understand their relative impact on test anxiety.

1.2. Purpose of the Study

Self-control, emotion regulation, rumination and gender are believed to have a remarkable impact on both test anxiety and test performance of the individuals. Since test anxiety consists of both cognitive and emotional components, it is necessary to deal with this phenomenon as a whole. Apart from the previous studies, which approached test anxiety from a rather limited perspective, the present study aims to investigate the relative relationships of gender, self-control, emotion regulation strategies, and rumination with test anxiety and find out how well each of the mentioned independent variables contributes to explain variance of test anxiety. By examining this relationship, a whole picture would be reached, which would be helpful in order not to fail to notice any components while dealing with test anxiety.

1.3. Research Questions

As stated above, the overall aim of the present study is to understand the relationship between test anxiety and the variables of gender, self-control, emotion regulation strategies, and rumination. To reach this purpose, the answer for the following specific research question was sought:

How does the degree of match between gender, self-control, emotion regulation strategies, and rumination relate to test anxiety?

Prior to testing the stated research question, the following auxiliary research questions were examined.

1) Is there a gender difference in test anxiety?
2) Is there a relationship between self-control and test anxiety?
3) Is there a relationship between emotion regulation strategies and test anxiety?
4) Is there a relationship between rumination and test anxiety?

1.4. Definition of the Terms

Test Anxiety: Test anxiety is the state of tension and worry that people experience under the assessment conditions (Spielberger & Sarason, 1989). It is mostly defined as “an undesirable state consisting of experiencing tension, worry

and over stimulation of the central nervous system when one's performance is being evaluated" (Ergene, 2003).

Self-Control: Self-control refers to the ability of exercising control over impulses, thoughts, behaviors and emotions for the sake of attaining personal goals (Vohs & Baumeister, 2004).

Emotion Regulation: Emotion regulation is a dynamic process that is shaped by the efforts of individuals to "maintain, modulate, or transform the nature, intensity, and duration of feeling states" (Thompson, 1994). The two emotion regulation strategies that are subject to the present study are cognitive reappraisal and suppression. Cognitive reappraisal is defined as the emotion regulation strategy in which the individual aims to change the way he/she views a situation that evokes emotion for the purpose of altering the emotional impact it has (Evers, Stok, & Ridder, 2010). Suppression is another emotion regulation strategy in which the individual inhibits the emotion expressive behavior (Gross et al., 2009).

Rumination: Rumination refers to the thinking pattern in which the individual tries to cope with the negative mood by repeatedly and passively focusing on the negative emotions (Treynor et al., 2003). Brooding and reflection are the two ruminative response styles that are mentioned in the present study. Treynor and his colleagues (2003) define brooding as "a passive comparison of one's current situation with some unachieved standard", and suppression as "a purposeful

turning inward to engage in cognitive problem solving to alleviate one's depressive symptoms".

1.5. Significance of the Study

The numbers that are mentioned about the extensity of test anxiety highlight the importance of its severity. Up to 40% of the students are found to suffer from test anxiety (Cassady, 2010) and tests are used in a wide range of domains as determinative tools of ability, capability, or knowledge. Furthermore, in many studies the strong relationship between test anxiety and test performance is evidenced. The broad scope of tests, the extensity of test anxiety as well as the highly significant relationship between them makes test anxiety a noteworthy factor to be taken into consideration by counselors, educators, parents, and also researchers. The findings of the present research, thus, have implications for educational, psychological as well as research purposes.

The examination of the relationships between gender, self-control, emotion regulation, rumination and test anxiety promises a new insight for those who are concerned on the topic, enabling them to screen and assess the mentioned relationships as well as providing more in depth understanding of emotional experiences of students with higher test anxiety. Since, the mentioned variables are gathered for the first time in order to understand test anxiety and provide new ways to cope with it although there are studies which investigated the variables separately. Despite having some information about the relationship between

some of the mentioned variables and test anxiety, the literature lacks studies that examine the nature of the relations of the variables to test anxiety, which proves the significance of the present study.

The findings of the present study would help the educators and the counselors to understand the experience of the students with high test anxiety, which is one of the primary steps to help those students. In addition, the findings may give cues to identify those students who are likely to suffer from high test anxiety since the study examines the variables that might explain test anxiety. Educators and counselors are also provided with new findings which would lead them to help students by teaching study skills and preparing training programs accordingly. Training programs might be prepared by taking into account the self-control level of the students or study skills that are in accordance with cognitive or emotional experience of the students might be selected to be taught. The knowledge that is obtained by the present study and the relative deductions of both educators and counselors can also be shared with the parents who are likely to have notable influence on the characteristics of their children.

The present study has also implications for research purposes. The relationships between test anxiety and each of the independent variables have already been examined for several populations. This study would contribute to the field by updating the existing knowledge since the mentioned relationships are reexamined for the current sample in the present study. Unlike the previous

studies, not only separate relationships but also the relative relations of the mentioned variables are subject to this study.

CHAPTER II

REVIEW OF LITERATURE

The emotional and cognitive experiences of the individuals with test anxiety are the main subjects of the present study. These emotional and cognitive processes that operate during the test taking situations have previously been investigated individually; yet the literature lacks studies that consider test anxiety as a whole composing of both emotional and cognitive experiences. Within itself the existing literature contains studies that examined test anxiety with each of the mentioned processes separately. Related to the cognitive component, self-control is one of the factors that interact with test anxiety. How the individual controls and regulates his/her behaviors and the level of self-control is associated with the experience of test anxiety. Emotion regulation is also found to be relating to this experience, yet the two emotion regulation strategies as cognitive reappraisal and suppression have opposite relationships with test anxiety. In addition, rumination is claimed to both trigger and be triggered by test anxiety. Considering the literature, it can be concluded that each of these factors relates to either the cognitive or the emotional components of test anxiety and there is a need for a study that combine them to gain a better understanding of test anxiety. Before investigating the relative relationship of these factors; in this part, the studies on each of the variables and their relationships with test anxiety are separately presented in detail.

2.1. Test Anxiety

Tests are important aspects of individuals' lives not only in academic settings but they are also important in terms of their careers. Besides, they are considered as the most widespread evaluating method worldwide and they comprise most weight of students' total grades in schools (Dodeen, 2009). Taking into account the importance of tests, improving and maintaining the academic and subsequently test performance of the students seems to be vital in educational domain. Through the way of improving the test-taking abilities and the test performance of the students, test anxiety can be marked among the main factors that affect this course. Although this factor is generally defined by its maladaptive aspect, it might also be evaluated as an adaptive motivation for students' academic success (Zeidner & Matthew, 2005; Schunk, Pintrich, & Meece, 2008). On one hand, there are studies in the literature which found that test anxiety might correlate positively with test and academic performance (i.e. Deffenbacher, 1978); on the other hand most related research support a negative correlation with test performance (Sarason & Stoops, 1978; Sarason, 1981; McKeachie, 1984; Keogh & French, 2001), academic performance (Bembenutty, McKeachie, Karabenick, Lin, 1998; Schunk, Pintrich, & Meece, 2008), concentration (Yıldırım, 2000; Dodeen, 2009), physical and mental health (Zeidner, 2007), and well-being (Hembree, 1988). Keogh and French (2001) stated that one way that influences the test performance of individuals is by susceptibility to distraction that is caused by test anxiety and they investigated its impact on test performance concluding its negative effect. Similarly, Sarason and

Stoops (1978) concluded the same negative effect of test anxiety on test performance in their study in which they examined the relationship between test anxiety and achievement oriented instructions to time perception. The relationship between test anxiety and academic performance was investigated by the study of Bembenutty and his colleagues (1998) in which they carried out a research focusing on how test anxiety and self-regulation relate to students' academic performance. This study showed that as test anxiety increases the academic performance of the students tends to decrease. Moreover, Yıldırım (2000) worked with a sample of high school students and found out that test anxiety has a negative correlation not only with academic achievement but also with concentration. Dodeen (2009) obtained similar results about concentration in the study that investigated the test-related characteristic of university students. Drawing attention to its negative correlational nature, the relationship between physical and mental health and test anxiety was mentioned by Zeidner (2007) while addressing a number of key issues in test anxiety research. Hembree (1988) also examined the profile of test anxious students and came up with the result of participants having lower sense of well-being as well as acceptance of responsibility, lower capacity for status, less tolerance, lower intellectual efficiency and less self-acceptance. Due to different findings about and the importance of test anxiety which is identified as a multi-dimensional and a dynamic process, it has been a prominent issue to be investigated in both psychological and educational fields (Schutz, Davis, & Schwanenflugel, 2002).

There have been many studies aiming to explain the nature of test anxiety so far. It is stated that the individual experiences this kind of anxiety when his / her performance is in evaluation, and the major concerns that rise in such condition are worry and emotionality (Chang, 1986; Ergene, 2003). Worry is considered as the cognitive domain which occurs when the individual is preoccupied with his or her performance whereas emotionality mostly refers to feelings and physiological arousal (Liebert & Morris, 1967; Chang, 1986). Thus, it would be misleading to regard only the emotional or psychological aspects of test-anxiety paying little attention to its cognitive component. Although anxiety is a physiological and psychological state, it is important to take into account the cognitive and behavioral aspects as well as the emotional and somatic ones (Seligman, Walker, & Rosenhan, 2001). As a matter of fact, Bedell and Marlowe (1995) have found that among the two components of test anxiety it is the cognitive one, which is worry, rather than the emotionality domain that affects scholastic success of the individuals in a permeative way. The dominant component, namely cognitive aspect of test anxiety, starts operating by the negative thoughts one experiences during the assessment situation. The negative thoughts such as worries or self-deprecating statements about one's performance or expected failure might interfere with his / her performance to a large extent (Zeidner & Mathew, 2005).

As mentioned before, worry is an important and the prevailing factor in test anxiety; yet, it is not the only operative one. The emotional and physiological aspects, which refer to the perception of autonomic arousal, function during the

assessment process and may have negative effects on the performance, as well as the behavioral component that includes manifestations such as lack of study skills or procrastination (Zeidner & Mathews, 2005). Considering the multi-dimensional characteristic of test anxiety, it would be deceptive to define the concept without taking into account all of the aspects, since in an assessment situation all the components happen to operate effectively.

While studying test anxiety, the perception of the individual should not be overlooked, in that the way one sees and evaluates the assessment process, one's capability to perform on that test and the test itself highly influence the level of test anxiety he / she experiences. The anxiety one feels generally increases when the individual regards the test or the test-taking process as exceeding his / her capability in intellectual, motivational or social domains (Putwain, Woods, & Symes, 2010). As Spielberger and Sarason (1989) mentioned test anxiety depends on the situation and the way the individual perceives the situation. Hence, the way that the individual perceives the test or the test-taking situation might determine whether that individual experiences test anxiety or not. In other words, the same test might be evaluated differently by two different students and one of them might not feel anxious while the other might. Davis, DiStefano, and Schutz (2008) relate this difference between perceptions to individuals' cumulative histories and their beliefs about themselves. Besides, Schutz and Davis (2000) establish a link between the perceptions and the goals of the individuals stating that goals provide the direction for one to make judgments about the situation. In short, there is a difference in the way that low test-anxious

students and high test-anxious individuals see testing, which consequently affects their performance (Schutz, Davis, & Schwanenflugel, 2002).

According to the attentional theory, where the individual directs his or her attention during the test taking situation is as important and determinant as how he or she evaluates the situation. Wine (1971) states that during the test taking process the individual divides his or her attention between task-relevant activities and preoccupations although he or she is expected not to be preoccupied with thoughts such as worry, self-criticism or somatic concerns in that time. That is to say, the more the individual minds irrelevant thoughts during a test, the less attention he or she can give to task-directed activities, which in turn leads to inefficient performance. Sarason (1984) also mentions about the same disruptive effect as conceptualizing it as cognitive interference model.

Test anxiety is said to negatively affect one's concentration, organization of ideas and thoughts, remembering key words and concepts, and even understanding the questions (Chang, 1986; Dodeen, 2009). The research about test anxiety shows that it has a notable negative effect on test performance (i.e. Daniels & Hewitt, 1978; Hancock, 2001). Considering this remarkable influence, other concepts that might interfere with test anxiety has also been examined. Among those concepts, gender is the one which has been mostly linked and had the most significant relationship (Hembree, 1988; Zeidner, 1990; Mwamwenda, 1993; Aysan, Thompson & Hamarat, 2001; Hong & Karstensson, 2002; Onyeizugbo, 2010). In most studies females are found to be higher in test anxiety

compared to males (Hembree, 1988; Zeidner, 1990; Aysan, Thompson & Hamarat, 2001; Hong & Karstensson, 2002). For instance, Hembree (1988) in his study in which he integrated the results of 562 studies on test anxiety found out that females had higher levels of test anxiety than males. In this study, it was also highlighted that although the difference between anxiety levels of males and females differ according to the school year, this difference remained significant regardless of the school year. In another study which investigated test anxiety and its antecedents, among 298 college students, female students reported higher test anxiety than male students (Hong & Karstensson, 2002). Aysan, Thompson and Hamarat (2001) conducted a study on test anxiety of Turkish students by assessing test anxiety both before and after the exam period. They concluded that younger students, especially females tend to experience more test anxiety. Zeidner (1990) examined the gender and sociocultural differences in test anxiety by a study that was composed of 163 male and 198 female students, resulting in a significantly higher level of test anxiety for females. On the other hand, there are a few studies which found no significance of gender on test anxiety (Mwamwenda, 1993; Onyeizugbo, 2010). In the related literature, the studies mostly show females experiencing a higher level of test anxiety than their male counterparts, yet the research that Mwamwenda (1993) conducted in order to confirm that no significant difference between the means of males and females was obtained. In addition, Onyeizugbo (2010) investigated the relationship between self-efficacy, gender, trait anxiety and test anxiety and significant gender differences were not found in test anxiety. When the effect of the interaction between test anxiety and gender on individuals' academic

performance was considered, the mediating effect of test anxiety particularly for females may appear to be more significant. Chapell et al. (2005) found that female graduate students who have low level of anxiety had higher performance scores than those with high level of anxiety, however there were no such difference for male students with low and high levels of test anxiety. In the same study, graduate and undergraduate female students with high levels of anxiety had higher performance scores than their male counterparts. The studies about the relationship between test anxiety and gender in Turkey replicated the results of the studies worldwide. In these studies, it is concluded that females tend to experience higher levels of test anxiety than males do (Aydın, 1993; Yerin, 2003).

In summary, there are several points that need to be considered while studying test anxiety. Test anxiety is seen as a fairly common problem especially in college students (Dodeen, 2009), since it has been stated that more than 20% of the college students are likely to experience test anxiety not only during but also before and after a test (Hembree, 1988). Mentioning the importance and effect of test anxiety, one should not fail to regard the two components of this factor, as worry and emotionality. In addition, gender is another factor that seems to have a prominent effect on test anxiety.

2.2. Self-Control

There have been many attempts to define the concept of self-control as it is closely related to emotion regulation which is also another form of self-regulatory behaviors. In addition, mentioning the importance and the nature of self-control, it is also necessary to make a distinction both between self-control and self-regulation and between self-control and emotion regulation.

Several disciplines such as social psychology, health psychology, clinical psychology, developmental psychology, sociology, medical sciences and even in criminology, self-control has been a noteworthy concept to be studied (Ridder et al., 2012). Researchers from different fields are interested in this concept since the effects of self-control are seen in a wide scope including scholastic success, health performance, well-being, relationships, or substance abuse (Finkel & Campell, 2001; Mischel & Ayduk, 2004; Tangney et al., 2004). Insomuch that, Ridder et al. (2012) mentioned self-control as one of the most beneficial trait in personality since in their study self-control was found to be mostly beneficial and adaptive.

Dealing with such a prominent concept, it would be reasonable to explain what is actually meant by self-control. However, as mentioned before self-control might be misinterpreted. It is possible to confuse the concept of self-control with self-regulation since in the literature these two concepts are sometimes used interchangeably. In the present study, self-control rather than self-regulation is

addressed because the term self-regulation is utilized as a broader and separate concept. To make a distinction between self-regulation and self-control, principally the aspect of consciousness needs to be discussed since Baumeister (2010) states that self-regulation consists of regulatory processes which are mostly automatic and unconscious whereas self-control concentrates on conscious and goal-directed behaviors. Kuhl (2005) also discussed this difference in terms of consciousness. In the relevant study, it is stated that in self-regulation the individual goes into implicit processes while self-control is defined as a more explicit and conscious process through one's intention. From another aspect, Coşkan (2010) differentiated these two concepts with regards to the internal and external constraints. According to this approach, the individual performs in order to satisfy his or her needs on behalf of the self while self-regulating (Forgas, Baumeister, & Tice, 2009); on the other hand, in self-control the individual tends to satisfy needs as well as obligations not only for the self but also by the external motivations. Although these two concepts can be used interchangeably in the literature, most of the relevant studies prefer to use self-regulation as a broader term that comprise both self-control which is mostly related to regulation of impulses, behaviors, and responses and also emotion regulation which is rather related to regulation of feelings (Rosenbaum, 1980; Kuhl, 1992; Baumeister, Bratslavsky, Muraven, & Tice, 1998; Larsen & Prizmic, 2004; Coşkan, 2010). Furthermore, there are studies in the field that included emotions in the process of self-control, yet they also function as states that influence the responses of the individuals (Kuhl, 1992; Vohs & Baumeister, 2004a; Hayle, 2010). In other words, although emotions can be referred, it is not

the emotions regulated but the subsequent responses and behaviors that are the focus in self-control.

Individuals perform in the way of attaining personal goals, therefore they plan and adapt their thoughts, feelings and therewith their actions (Schunk & Ertmer, 1999; Zimmerman, 2005). This process, which is called self-control, is described as cyclical (Bandura, 1986; Schutz & Davis, 2000; Zimmerman, 2005) due to its personal, behavioral and environmental triadic processes.

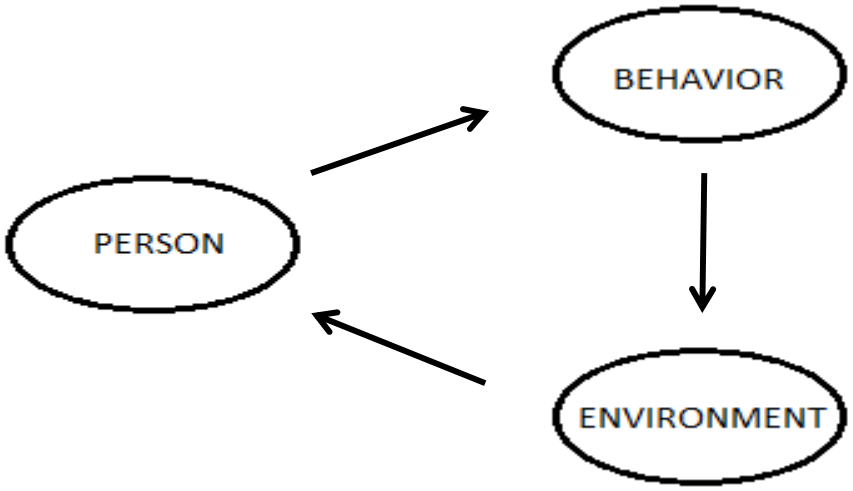

Figure 1. Cyclical Interaction in Self-Regulation. Source: Zimmerman, 1989, p.15.

As can be seen in Figure 1, there is a cyclical interaction among environmental, behavioral and personal processes. Seeing that these factors are changing by time, the person needs to adjust him/herself to the changing world. Winne (1997) mentions that there are no unself-regulated people and naturally it is misleading

to talk about the absence of self-control. Thus, it may be inferred that every individual controls and regulates his or her performance or responses in some way in life. Accordingly, Zimmerman (2005) states that every self-regulated person needs to adjust his or her goals and choices to the changing conditions of intrapersonal, interpersonal or environmental processes. Another cyclical process can be seen in self-regulation, in which self-control also takes place. It is claimed that self-regulation may occur in one or more of the three cyclical phases as forethought phase, performance or volitational control phase, or self-reflection phase (Schutz & Davis, 2000; Zimmerman, 2005). Forethought phase is mainly about the motivations that influences one's actions and the regulations in this phase might by nature affect the performance phase. In this performance, namely volitional, control phase the individual endeavors to regulate his or her attention or actions. This is the phase which is constituted by the self-control efforts of the individuals and the efforts made in this phase consequently influence the responses that the individual gives to the performed actions. This phase, which is called self-reflection phase, comes after the individual performs his or her actions. Once again, the self-reflections of the individual have effects on the forethought phase, providing feedback for subsequent influential motivations (Figure 2).

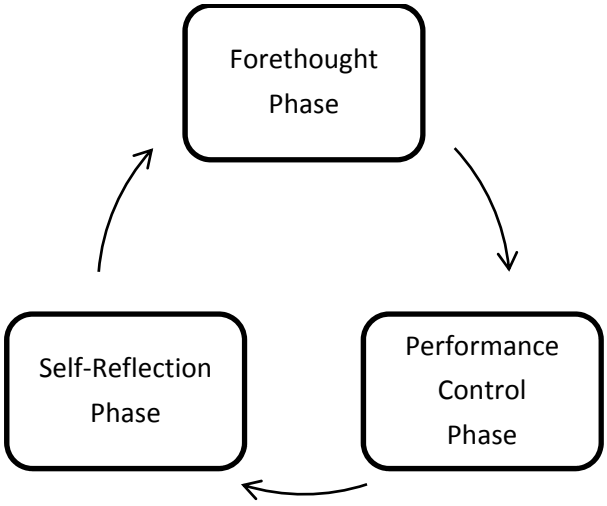

Figure 2. Phases in Self-Regulation. Source: Schunk & Zimmerman, 1998, p.16.

Having shed light on where self-control fits in the whole picture, it is also necessary to clarify what this concept really is. Many researchers have attempted to define self-control which is considered as one of the most important capabilities of humans. (Larsen & Prizmic, 2004; Zimmerman, 2005; Hayle, 2010; Magen & Gross, 2010). This concept is generally discussed with regards to goals and expectations that one considers while regulating his/her actions and responses. Hayle (2010) claims that individuals tend to regulate their responses in accordance with the discrepancies between their expectation and the reality. The responses might be behaviors they perform as well as the cognitions, in any way these responses are almost always influenced by affect. Similar to Hayle's approach, Magen and Gross (2010) explains self-control by drawing attention to long-term goals as they view self-control as performing in accordance with long-term goals in spite of the presence of opposing short-term goals. Moreover, they claim this can be qualified as an ability to resist the temptation of those short-term goals and how the individual regulates his or her responses depends

on the temptation they encounter. Vohs and Baumeister (2004b) interpret this term by taking consideration the motive for regulation as they view self-control as effort to inhibiting socially unacceptable or undesirable impulses by consciously regulating responses. A general perception of self-control is that it is the capacity of the individual to stimulate desirable responses while inhibiting the undesirable ones by regulating behaviours, thoughts and emotions with the consideration of the potential costs of these responses (Carver & Scheier, 1981; Bandura, 1989; Baumeister, Heatherton, & Tice, 1994; Hirschi, 2004; Tangney et al., 2004; Vohs & Baumeister, 2004a). Agreeing with the aforementioned definitions, Ridder and his colleagues (2012) stated four main qualities of self-control; first of them is that self-control generally tends to encourage desirable responses while inhibiting the undesirable ones, secondly it positively contributes to a large range of behavior, thirdly self-control is a conscious and effortful process and lastly it influences the actual behavior.

Although a consensus on what is meant by self-control is possible to be reached, the interpersonal differences need to be taken into consideration to understand it in depth. Any self-regulatory strategy does not function in the same way for all individuals; besides, for a particular person a specific self-regulatory strategy might have different effects depending on the occasion (Zimmerman, 2005).

The considerable effects of self-control can be seen in a wide range of domains as Ridder and his colleagues (2012) states this self-regulatory process is closely linked to nearly all forms of behaviors that help creating a successful and healthy life. There have been many studies that emphasized the effects of self-control on

a great variety of areas. For example, academic performance is one of the areas that is closely linked to self-control. Zimmerman (2005) claimed that the use of self-control strategies enable individuals to concentrate on the task and maximize their effort. Thus, it is a prominent factor for both educators and education researchers owing to its positive correlation with academic success (Pintrich et al., 1993; Bembenutty et al., 1998; Pintrich, 2000; Tangney et al., 2004). Besides, Pintrich and his collegues (1993) state that the individuals who make use of self-control strategies tend to manage their resources more effectively, which consequently enhances their academic achievement. On the other hand, academic stress that negatively influences the academic performance of the students as well as stress in general terms is found to be negatively correlated with self-control (Gintner, West, & Zarski, 1989; Akgun & Ciarrochi, 2003).

In the field of psychology, it is possible to see diverse effects of self-control and it is even defined as "the bedrock of healthy psychological functioning" by Hayle (2010). The studies conducted in this field are of supportive quality for this view. Individuals with high self-control tend to be better at regulating their thoughts, emotions and inhibiting impulses as well as negative emotional responses than those with low self-control (Mischel, Cantor, & Feldman, 1996; Baumeister et al., 1998; Rothbart, Ellis, Rueda, & Posner, 2003; Kiearas, Tobin, Graziano, & Rothbart, 2005). Moreover, studies show that the individuals with high self-control are likely to be better at interpersonal and close relationships and experience greater psychological well- being (Mischel, Shoda, & Peake, 1988; Shoda, Mischel, & Peake, 1990; Finkel & Campell, 2001; Tangney et al.,

2004). Some other relevant research indicates that people with high self-control report less psychopathology, substance abuse, eating disorders and aggression (Tangney et al., 2004) whereas those with low self-control tend to engage in deviant behaviors more frequently than the others (Vazsonyi et al., 2001).

The relationship between gender difference and self-control has long been investigated. Yet, relevant studies show varied results therefore it is hardly possible to come up with a constant conclusion about this relationship. In a study that Korean college students participated, Bembenutty (2007) investigated the relationship between students' motivation for learning and use of self-regulation. Within this study, it is concluded that female college students tend to have higher level of self-control than their male counterparts. Similar results were obtained by the study that Shekarkhar and Gibson (2011) conducted in order to examine the relationship between gender, self-control and offending behaviors of a large group of Latino youth. Gottfredson and Hirschi (1990) also mentioned that females develop stronger self-control than females and Burton et al. (1998) obtained the same results in their study which assessed whether Gottfredson and Hirschi's findings and theory can empirically account for the gender gap or not. The results of a research made in another area, which is driving, also revealed females having higher level of self-control (Gwyther & Holland, 2012). Thus, it can be said that in many studies that investigated this relationship, it is found that females usually have stronger self-control than males do. However, it would be appropriate to approach these findings with caution since in other studies

discrepancies between the subjective reports and objective assessments of self-control were found (Duckworth & Seligman, 2006).

Finally, there are not many but few studies concerning the effect of self-control on test anxiety despite the fact that significant and important relationships were found in the relevant studies. Hembree (1988) stressed the relationship between test anxiety and self-control stating that test anxiety causes poor performance. Those who have low self-control tend to experience high level of test anxiety (Hembree, 1988; Brackney & Karabenick, 1995; Bembenutty et al., 1998) depending whether the test is viewed as important or not. When the test is considered as easy, test anxiety seems to have no difference between those who differ in levels of self-control. In addition to the perception of the tests' importance, the study skills of the students have also a moderating effect on the relation between test anxiety and self-control (Bembenutty et al., 1998). As the students utilize self-regulatory strategies such as managing time or the study environment, the test anxiety level they experience is found to be reduced (Brackney & Karabenick, 1995).

2.3. Emotion Regulation

Emotion regulation has appeared to be a new research domain in the past three decades. Although emotion regulation is a relatively new domain, to date, philosophers from Socrates discussed the role of emotions (Solomon, 1976). It is possible to see the cues of emotion regulation in Freud's studies even though

they were qualified as anxiety regulation since Freud used anxiety as a hypernym for negative emotions (Gross, 1999). Contemporary research in emotion regulation also deals with decreasing negative feelings.

Self-regulation was also another area of research that included emotion regulation. Until recently, self-regulation has been the focus of research in educational studies. Self-regulation involves "self-generated thoughts, feelings and actions that are planned and cyclically adapted to attain personal goals" (Schunk & Ertmer, 1999, p.251). As mentioned; feelings are one of the aspects of self-regulation, which explains the reason why emotion regulation might have been considered solely as a part of it. Although the inclusion of emotional aspects in educational area is recent, there are several studies which highlighted the importance of emotion regulation in self-regulation (e.g. Boekaerts, 1995; Reed, Hagen, Wicker, & Schallert, 1996).

Stress, as well as self-regulation, was a domain that comprised emotion regulation before it has started to be examined as a separate concept. In 1940s psychological studies in stress emphasized the cognitive processes which led to the distinction among: (1)primary appraisal of the situation that is about how the individual evaluates the situation, (2) secondary appraisal that is the way the individual evaluates his capabilities to cope with the situation, and (3) coping which is about how the individual comes through the situation creating the stress (Lazarus, 1991; Gross, 1999; Lazarus, 1999). The coping response might also be divided into two subdomains as (1) problem-focused and (2) emotion-focused. In

the former one, the individual focuses on fixing the problem whereas in the latter the individual attempts to lessen the negative emotion that the problem causes (Gross, 1999). It is the latter domain that is the basis of emotion regulation.

Since it is a dynamic process, individuals regulate their emotions according to their own stable characteristics and ever-changing environmental demands (Gross et al., 2009). This dynamic process is viewed as an aspect of emotional intelligence. (Thompson, 1994). As Gross (2010) states emotions seem to come and go as they wish, however individuals often maintain, modulate or transform the nature, intensity or the duration of these emotions as an indicator of their emotional intelligence. Emotion regulation is generally defined as the efforts that individuals make so as to suppress, change, or put aside the expression of their emotions for accomplishing their goals (McCarty & Rude, 2001; Cole, Martin, & Dennis, 2004; Gross, 1999). The nature and the effect of emotion regulation might differ among individuals. The selection of the strategies by the individuals, the time they are selected and utilized, the purpose of regulating emotions and the context in which emotions are regulated affect the adaptability and the success of emotion regulation strategies (Thompson, 1994; Mayer & Salovey, 1997; Gross, 2001; Gross, 2002; Gross, 2007; Gross & Thompson, 2007).

The strategies that are used to regulate emotions might depend on many factors that are mentioned before. One of the most effective of these factors is the time when they are first utilized. The time factor refers to the exact point where the individual attempts to regulate through the emergence of emotional response and this factor can be viewed as determinant in which emotion regulation strategy to

be used. Exactly when the regulation happens through the process of emergence and manifestation of emotions determines whether the regulation strategy is antecedent-focused or response-focused (Gross, 1998; Gross & John, 2003; Gross et al., 2009; Magen & Gross, 2010). Côté (2005) mentions about the same distinction among regulation strategies, referring them as deep acting (antecedent-focused) and surface acting (response-focused). By antecedent-focused strategies the emotions are regulated before they are fully activated so that the internal experience is changed whereas by response-focused strategies the regulation takes place once they are activated thus rather than the internal experience but the public display of emotion can be changed (Gross, 1998; Gross & John, 2003; Côté, 2005). To fully understand the emergence of emotions and selection of emotion regulation strategies, the "modal model" of emotion and the "process model" of emotion regulation need to be reviewed as shown in Figure 3.

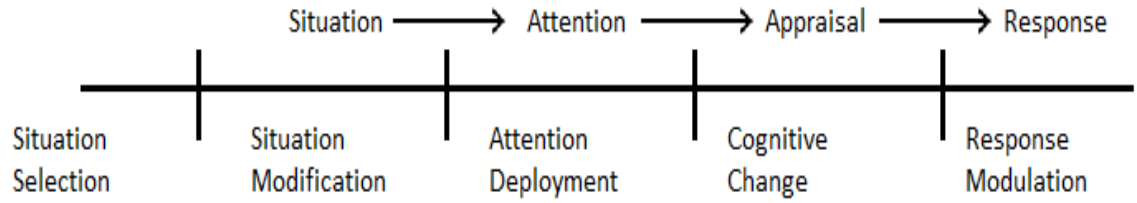

Figure 3. Emotion Regulation Process Model. Source: Gross & Thompson, 2007, p.10.

As can be seen in the above figure, emotion regulation strategies may affect in any of the five points in the emergence of emotions. While monitoring, evaluating or modifying emotions, one goes into a variety of intrinsic and

extrinsic processes (Thompson, 1994) and in any of the regulation strategies it is possible to notice these processes. Shortly considering the "modal model" of emotions, the situation that affects the other processes can be seen as the starting point of emotion generative process and it is mentioned that the situation can be internal or external (Ellsworth & Scherer, 2003). Then, for the emotion to emerge the individual attends the situation as a consequence of a person-situation transaction and afterwards evaluates the situation which is where the individual attaches meaning to the situation (Gross and Thompson, 2007). This appraisal is said to be the point which provides a context for the emotion to be generated (Schutz & Davis, 2000); besides Gross and Thompson (2004) state that whatever the situation that activates the emotion is, it is in fact the meaning that the individual attaches to that situation which shapes the emotion. Finally, the emotional responses that the individual gives are affected and formed by the appraisal of the attended situation by that individual (Barrett, Ochsner, & Gross, 2007).

In the same figure, the process model of emotion regulation is also presented. According to this model that is designed by Gross (1998) the first point that regulation strategies may act is on the situation. In this phase, emotions might be affected in two different ways as situation selection and situation modification. Of these two; situation selection, which includes possible avoidance from certain situations that might evoke emotions, is the one that happens in the first place. Situation modification might be utilized in the second place and similarly it is also about shaping the situation. At this point, the individual attempts to make

changes in the environment of the situation to regulate its impact on the emotion (Gross, 1998; Gross, 1999). Apart from the situation itself, the individual may also regulate his or her emotions by modifying the attention that is given to that particular situation, which is called attentional deployment. In this kind of the regulation, three strategies as distraction, rumination, and shifting attention might be utilized (Derryberry & Rothbart, 1988; Nolen-Hoeksema, 1993); among these, distraction refers to paying attention to the nonemotional aspects of the situation, rumination is shifting the attention to the emotional aspects of it whereas shifting attention means totally changing the focus of attention away from the situation. Both of the regulation strategies in this phase involve change in the attention that is paid to the situation. The individual may also change the way he or she views the situation and alter the meaning he or she gives to that particular situation and accordingly affects the emotion it activates. This kind of regulation is called cognitive change which can be utilized in the appraisal phase of the emotion generative process. The last process that emotions can be regulated is the response phase, in which one can modulate the response to be given. Unlike other regulation types, response modulation is utilized after the emotions are fully activated (Gross, 1998). In this type of emotion regulation, the individual directly influences his or her physiological, experiential, or behavioral responses (Gross & Thompson, 2007).

There are a variety of emotion regulatory behaviors some of which are distraction, avoidance, suppression, escape, emotion and problem focused coping, and cognitive reappraisal (Cisler, Olatunji, Feldner, & Forsyth, 2010).

Cognitive reappraisal and suppression, which are addressed in the present study, are among many emotion regulation strategies that individuals utilize when they want to experience feelings in a way that they would prefer or in a way that would contribute to their goals (Tamir, 2009). There are notable differences between cognitive reappraisal and suppression as a result of their distinctive nature, besides the effects they have on psychological, behavioral and environmental domains differ. Cognitive reappraisal refers to re-evaluating and subsequently changing the meaning which is attributed to the situation so as to alter its emotional impact (Gross, 1999; Gross, 2002; Gross & Thompson, 2007; Evers, Stok, & Ridder, 2010). Since cognitive reappraisal distances the individual from the unpleasant feeling that the situation triggers, it is also defined as a "cooling" strategy (Mischel and Ayduk, 2004). Moreover, rather than solely reappraising the situation, Guiliani and Gross (in press) view this strategy as a kind of reframing and even reconceptualization. Suppression, on the other side, is a response strategy which is used to reduce or inhibit the overt expression of emotion (Gross, 1998; Gross & John, 2003; Gross et al., 2009). Gross and John (1997) mentioned that it is the individual him/herself who decide whether to express or not an emotional experience because emotions, contrary to general notion, do not compel the individual to take action they only suggest it.

Many studies have been conducted on cognitive reappraisal and suppression and their effects. The studies on the relationship between suppression and the emotional experience show differing results. There has been studies which came up with the conclusion that those making use of suppression showed a decrease

in the emotion-expressive behavior (Gross & Levenson, 1993, 1997) whereas other research can be found which concluded that although suppression reduces the positive emotion experience it does not have the same effect on the experience of negative emotion (Gross & Levenson, 1993; Stepper & Strack, 1993; Gross & Thompson, 2007;). Moreover, Gross and his colleagues (2009) mention that although those who suppress their emotions are likely to express less negative emotions than they really experience, actually they express not less than those who suppress less frequently. Therefore, as Higgins (1987) stated, suppression creates a difference between what the individual actually experiences and what he or she expresses and this may cause "a discrepancy between the inner experience and the outer expression". To the contrary, reappraisal is claimed to reduce negative affect effectively and this supports the idea that emotional response can either decrease or increase depending on the emotion regulation strategy (Cisler et al., 2010). Another factor that is related to suppression is depression.

The basic difference between cognitive reappraisal and suppression is that the former one is regarded as an adaptive strategy to regulate emotions while the latter is seen as maladaptive (Gross & John, 2003; John & Gross, 2004; Myers, 2009). Reappraisal attempts to change the way the individual thinks about a situation so as to alter its emotional impact whereas suppression aims to inhibit the overt expression. The former is claimed to be more effective than the latter one in terms of the effect they have on memory. It is found that both reappraisal and suppression may decrease the behavioral expression of emotions; however,

reappraisal also decreases the experience of emotion additionally without no damage to the memory whereas suppression fails to do so with the addition of an impairment in the memory (Gross, 2001). The reason behind this difference is mentioned in several studies (Gross John, 2003; John & Gross, 2004). When the individual attempts to suppress his / her emotions, cognitive resources are in action as the individual needs to self-monitor and act in a corrective way. On the contrary, as reappraisal happens in the earlier phase of emotional process, the individual does not need any self-regulatory effort during the emotion regulation. Thus, the memory, unlike in suppression, keeps unimpaired. Individuals who tend to suppress their emotions reported having worse memory than those who do not suppress, which means that suppression can be mentioned as being cognitively more costly than reappraisal (Gross & John, 2003). Furthermore, reappraisal is said not to have any noticeable physiological consequences opposite to suppression (Gross & John, 2003) and it is also associated with greater well-being and better social functioning (John & Gross, 2004).

When the social costs of these regulation strategies are mentioned, the effects of them on relationships need to be considered. Research on this subject shows that suppression is negatively correlated with social closeness and support, as suppressors tend to share emotional experiences less than reappraisers who are more likely to share both positive and negative emotions (Rime et al., 1992; Gross, 2001; John & Gross, 2004). John and Gross (2004) also found that reappraisers tend to have closer relationships and they are more likely to be liked

by their friends. As a result, it can be inferred that reappraisal is healthier psychological, cognitive and social consequences.

The relationship between the gender and emotion regulation has also been examined in many studies however they yield different results. Women are generally reported to utilize emotion regulation strategies more than men do. For instance, Garnefski and his colleagues (2003) examined the male and female comparability in the extent to which they utilize emotion regulation strategies. In their study, the results revealed that females tended to use emotion regulation strategies such as rumination, catastrophizing, and positive refocusing more often than males. Nolen-Hoeksema and Aldao (2011) also conducted a study that focuses on the differences between male and females in emotion regulation strategies such as rumination, suppression, reappraisal, problem-solving, acceptance, and social support. The study revealed significant gender differences in emotion regulation strategies as females were found to be more likely to report using several emotion regulation strategies than males do. However, another study shows that males make use of cognitive reappraisal as an emotion regulation strategy more than females (Khodarahimi, Hashimah, & Mohd-Zaharim, 2011).

Emotion regulation in general has significant effects on a variety of domains. Educational setting is one of those domains as the emotion regulation processes that are utilized both before and during the test-takings situations are claimed to determine academic performance (Schutz & Davis, 2000). Regulating emotions

is especially necessary as well as important during the moments of challenge such as a test which activates emotions like anxiety (Gross, 1999). Emotion regulation is thought to take place even in the development, exacerbation, or the maintenance of anxiety (Martin & Dahlen, 2005; Amstadter, 2008). The anxiety students feel about a test is closely related to how the test is evaluated. The cumulative histories and individuals beliefs about their performances affect the way they appraise the test and hence this appraisal may lead to test anxiety for some (Davis, Stefano, & Schutz, 2008). When the individual manages to alter his / her appraisals about the test performance, especially self-efficacy beliefs, test-anxiety will be more likely to be eliminated. Besides, the emotion regulation strategy that is utilized acts upon the test anxiety that one experiences. In general, those who regulate their emotions by reappraising the situation are found to be experiencing low level of test anxiety compared to those who do not regulate or those who tend to suppress their emotions (Spielberger & Vagg, 1995; Schutz & Davis, 2000; Davis, Stefano, & Schutz, 2008). Similarly, in their research Bradley, McCraty, Atkinson, Tomasino, Daugherty, and Arguelles (2010) investigated the relationship between emotion regulation strategies and test anxiety and they concluded that those who learnt and started to benefit from emotion regulation strategies significantly reduced their negative affect and test anxiety. The use of emotion regulation strategies especially the cognitive ones and anxiety are reciprocally effective on each other as those strategies are assisting the management of stressful events (Garnefski, Kraaij, & Spinhoven, 2001; Zlomke & Hahn, 2010). Schutz and Davis (2000) and Zlomke and Hahn (2010) state that test anxiety decreases when the individual cognitively

reappraises the test as moderately important rather than overly important and also considering the self as being able to cope with the test despite the problems that may occur. On the other hand, there are some studies which state that those who suppress their emotions and thoughts experience less trait anxiety (Codd & Myers, 2009; Myers, L. B., 2009). Although suppressors experience anxiety more than those who do not suppress, what they report is generally the opposite (Derakshan & Eysenck, 1997); furthermore it is stated that they seem to believe in what they report (Lambie, 2009). The goals of the students' are also of great importance since they provide a direction for regulating emotions by the judgments students make for the meaning of these goals (Schutz & Davis, 2000; Schutz, Davis, & Schwanenflugel, 2002). Especially while regulating their emotions by cognitive reappraisal, individuals consider their goals as well as where they think they stand in relation to these goals. Test anxiety is more likely to occur when the individual perceives the test as important and evaluates him/herself as being not able to handle it (Smith, 1991).

Though a negative correlation has generally been found between test anxiety and emotion regulation especially cognitive reappraisal, Lambie (2009) mentioned about contrary situations depending on the awareness of the emotion that is experienced. In other words, it is claimed that unless one is aware of the emotion, the choice he or she makes about regulating that emotion is not rational. Hence, regulating that emotion does not necessarily mean an effective regulation which may reduce test anxiety. As Davis, DiStefano and Schutz (2008) stated, the appropriate selection and the effective enactment of the emotion regulation

strategy is as necessary as engaging in that strategy. Therefore, either consciously or unconsciously students may utilize emotion regulation strategies so as to decrease the level of test anxiety they experience however merely engaging in such strategies may not result in the way they desired; since they also need to select the strategy appropriately and also perform it effectively.

In summary, people differ in the goals they have and the way they experience emotions and hence that they also differ in which emotions they prefer to feel and in the way they regulate them (Tamir, 2009). Thus, it is natural that the effect of the emotion regulation processes on them would be different for each of the individuals.

2.4. Rumination

Rumination is a response style that has a prominent effect on many factors related to individuals. Generally speaking, it worsens depression, impairs problem solving, increases negative mood and so on. Nevertheless, there may be differences in these relations when other factors (i.e. the type of rumination, gender) are considered. In ruminating the individual passively yet repetitively focuses attention on the situation that causes negative mood to cope with it. (Morrow & Nolen-Hoeksema, 1990; Lyubomirsky & Nolen-Hoeksema, 1993). Rumination is characterized as passive process because individuals generally attend to their inner experience rather than directing their energy outwards (Carver & Scheier, 1982). Yet more, it is probable for them to isolate themselves

for the sake of concentrating on the situation which causes a negative mood (Nolen-Hoeksema, 1991). In rumination, individuals do not generally attempt to solve the problem. Rather than taking action against the problem, one tends do repetitively and passively think on the situation of the problem (Nolen-Hoeksema, 1998).

According to Nolen-Hoeksema (1987) rumination has three notable characteristics; first ruminative response can be defined as a vicious cycle in that the more one concentrates on the negative mood the more he or she feels depressed, secondly it activates the negative memory that is related to the situation and by preoccupying the individual with these negative memories prevents the individual to think about other motivations that might help, and thirdly the thoughts about the problem are generally negative through the rumination process thus hindering the individual to take action towards solving the problem.

Problem solving abilities is another domain that is closely related to rumination. In general, those who tend to ruminate are claimed to be bad at problem solving compared to those who do not ruminate (Lymbursky & Nolen-Hoeksema, 1991) and they are also said to feel less satisfied with their performance (Ward, Lyubomirsky, Sousa & Nolen-Hoeksema, 2003). The problem solving strategies of the ruminators are found to be impaired, passive, and less structured (Nolen-Hoeksema & Morrow, 1991). Another effect of ruminating is on the action as ruminators are found to be less likely to take action against the problem than

non-ruminators, which cyclically leads them to ruminate more since their problem keeps unsolved (Watkins, & Moulds, 2005).

Another research on rumination shows that having less mastery on the important events in one's life results in a greater tendency to ruminate (Nolen-Hoeksema, Larson, & Grayson, 1999). This relation is suggested to be relevant to the fact that those who have less mastery may feel that they are not much able to overcome their problems and consequently providing a basis to ruminate. Lymbursky and Nolen-Hoeksema (1991) stated that when the individual ruminates he or she is likely to activate memories that once caused negative mood. Besides, Watkins and Teasdale (2001) discussed that once the memories are activated, the individual may generate new negative meanings because of the ruminative process.

According to the research on gender and rumination, females tend to have more ruminative response styles than males (Nolen-Hoeksema, 1991). In another study, results show that females are more likely to ruminate than males independent of which type of ruminative response they utilize (Nolen-Hoeksema, Larson, & Grayson, 1999). Nolen-Hoeksema, Morrow, and Fredrickson (1993) also examined the gender difference in rumination. Their findings indicated that females tend to ruminate on their depressive mood more than males. Besides, compared to males, the depressive mood of the female participants is concluded to be longer and more severe.

Treynor and his colleagues (2003) suggest rumination to be studied by its subcomponents that are reflection and brooding as it is claimed that each of them has different effects on the experience of the individuals. When the individual goes into reflection as a kind of ruminative response he / she tries to cope with the depressive symptoms by turning inward (Treynor, Gozalez, & Nolen-Hoeksema, 2003). In reflective rumination, which is a rather active coping strategy, one tries to understand the underlying reasons of the negative mood that is experienced. That type of rumination response can be considered as a cognitive problem solving strategy and it is associated with adaptive coping styles (Burwell & Shirk, 2007; Surrence et al., 2009). On the other hand while brooding, as another type of ruminative response; the individual tends to passively compare the unachieved standards with the situation he or she is in. In brooding, which is mostly associated with negative affect (Moberly & Watkins, 2008), focusses self-critically on the negative mood and also its consequences. Since passively focusing on the negative mood does not help but increases the negative mood, it is mostly considered as a maladaptive coping strategy.

Whether rumination is an adaptive or a maladaptive response style has also been discussed, leading to various conclusions. Some studies show that rumination motivates the individual to solve a problem thus can be seen as adaptive (Martin & Tesser, 1996). To the contrary, rumination is believed to be maladaptive in nature since it causes a discrepancy between the desired standards and the present situation thus leading the individual to give up striving (Carver & Scheier, 1981; Nolen-Hoeksema, 1996). Gross (1999) characterized rumination

as controlled, conscious and effortful and emphasized the purpose of ruminative response as decreasing depressive feelings despite its opposite effect on these feelings. Furthermore, it is claimed that the feelings or thoughts that are ruminated seem to increase in the intensity and duration. Treynor and his colleagues (2003) reached different conclusions on the nature of ruminative responses. According to their studies, the type of ruminative response influences the outcome. They found that the individuals who reflect may tend to experience more negative affect in the short term; however reflection eventually reduces this negative affect in the long term; which emphasizes the adaptive characteristic of reflecting. Yet, both in the short and the long terms brooding is found to be positively correlated with depression and negative affect. Owing to that study, brooding can be characterized as a maladaptive coping style while the other is less maladaptive.

Considering the related studies a close relationship between test anxiety and rumination is expected, yet there are not many studies which investigated this relationship. In one of the few studies, it is found that the individuals who have high level of test anxiety engage in more negative rumination (Hollandsworth et al., 1978). Grant and Beck (2010) conducted a similar study that showed the same relationship between level of anxiety and rumination. They also stated that those with high test anxiety, experience prolonged amounts of rumination even after the test-taking situation. Moreover, these individuals tend to have more negative self-evaluative cognitions (Sapp, 1993, cited in Wong, 2008) and relatedly experience more ruminative, self- evaluative worry (Wine, 1971).

Similarly, Sarason, Pederson, and Nyman (1968) stated that highly test anxious students seem to ruminate rather than responding adaptively. Besides, rumination was qualified as one of the internal producers of test anxiety (Schachter, 2007). Paul and Eriksen (1964) also related the poor performance that is caused by test anxiety to the self-deprecating ruminations. Furthermore, Thyer et al. (1981) suggested reducing task-irrelevant ruminations in order for being able to keep concentrated on the task during the test taking situation. Any studies that investigated the relationship between test anxiety and the two ruminative responses as brooding and reflection separately could not be found in the literature.

2.5. Relationship of Gender, Self-Control, Emotion Regulation Strategies, Rumination Tendencies with Test Anxiety

As stated earlier, this study aims to understand underlying emotional and cognitive experiences of test anxiety. Several emotional and cognitive processes seem to accompany to during the test taking. This research is significant with that several variables were brought together to examine their relative relationships to test anxiety as these variables and their relations to test anxiety were examined individually. In the literature, there is only a little research about the relationship between test anxiety and self-control and about the relationship between test anxiety and rumination. Among the variables in this study, the relationship between which is mostly investigated is the one between test anxiety and emotion regulation.

Considering the existing studies, it can be concluded that each of the variables are significantly related to test anxiety separately. In general, those who control their thoughts or behaviors are believed not to experience high levels of test anxiety (Hembree, 1988; Brackney & Karabenick, 1995; Bembenutty et al., 1998). Likewise, those who cognitive reappraise their emotions are not likely to have high anxiety (Spielberger & Vagg, 1995; Davis, Stefano, & Schutz, 2008), particularly because they are supposed to be good at managing stressful events (Zlomke & Hahn, 2010). The relationship of test anxiety with suppression is rather complicated since what the individuals report might differ from what they actually experience. However, it is generally claimed that those who suppress their emotions tend to experience high level of test anxiety although they might state the opposite (Derakshan & Eysenck, 1997). In rumination, it is hardly possible to come across studies that investigated the relationship between test anxiety and two ruminative response styles separately. Yet, rumination on the whole is related to high test anxiety (Hollandsworth et al., 1978). Furthermore, based on the existing studies on the mentioned relationship it can be supposed that there are differences in the level of test anxiety and the type of ruminative response style utilized. For instance, reflection is accepted as an adaptive coping strategy (Surrence et al., 2009) that helps the individual to turn inward and understand the reasons of the negative experience. Hence, those who ruminate reflectively might be expected to have low level of test anxiety since they would take an active stance towards this negative mood to cope with it. On the other hand, those who tend to brood as a type of rumination might be supposed to have a high level of test anxiety as brooding is considered as a maladaptive way of

coping (Burwell & Shirk, 2007). Since in brooding, the individual passively focuses on the negative affect he or she is not likely to reduce his/her level of test anxiety. Gender difference is also found to be significant in test anxiety, females having more test anxiety than males.

Although there are a number of studies that shed light on the relative relationship of the variables in this study, any studies that investigated precisely this relative relationship do not exist in the literature. In the light of the existing studies, individuals who control their thoughts, cognitively reappraise their emotions and act accordingly, and tend to reflectively ruminate upon their negative mood are more likely to experience low level of test anxiety or reduce the level of test anxiety they experience. This situation is more probable to be seen in males as they experience a rather low level of test anxiety compared to females. On the other hand, individuals who have low level of self-control, use brooding as a rumination response style and tend to suppress their emotions are supposed to have high level of test anxiety. Contrary to the previous situation, this scene is more likely to be observed in females since they are prone to experience high level of test anxiety.

When the underlying emotional and cognitive experiences of test anxiety are considered, suppression shows a complicated characteristic because of the discrepancy it causes between the actual experience of the self and the expression of it. As Higgins (1987) stated when the individual suppresses his/her emotions, it is likely that the negative affect would not be expressed to the extent

that it is actually experienced. Thus, the experience of suppression and the related self-reports may yield difference consequences. In addition, as Gross and James (2003) mentioned, although suppressors try to suppress their emotion, they manage to suppress their expression of emotional experience yet fail to decrease their actual experience. In other words, they experience greater negative affect than those who do not suppress their emotions. Thus, certain judgments on whether those who experience high test anxiety or those who experience low test anxiety would report suppression could be misleading. Another variable that might lead to unexpected results might be rumination since the literature lacks studies that examined either the relationship between brooding and reflection with test anxiety or the relative relationship of the two ruminative response styles with other variables. Yet, the adaptive or maladaptive characteristics of these ruminative response styles and their investigated relationship with negative affect provide clues to follow to understand test anxiety.

2.6. Summary

The difficulty of entering a university, the superfluity of graduates with regards to limited employment opportunities, the prominence and necessity of academic achievements and the determinant role of tests in these areas causes tests to be of vital importance for both students in academic settings and for candidates in occupational settings. Test anxiety is among the main factors that affect and even block test performance since it is claimed to have a negative impact on

concentration, physical and mental health, organization of thoughts and ideas, recalling concepts, understanding, and well-being.

Many factors affecting test anxiety can be found in the literature, yet self-control, emotion regulation, rumination and gender are among the most prevailing ones. Self-control has been a notable topic for many studies. In those studies, significant relationships were found between self-control and test performance as well as test anxiety. In general, the lack of self-control is related to high levels of test anxiety. When considered in detail, the perception of the test-taking situation by the individual affects this relationship since when the test is seen as important or highly important test anxiety is likely to happen. To the contrary, when the individual regards the test as unimportant, the likelihood of experiencing test anxiety decreases. Apart from the perception of the test and the characteristics of the individuals, it is evidenced in the previously mentioned studies that the low level of self-control is associated with high test anxiety which consequently causes poor performance.

The ability to regulate emotions and the type of emotion regulation strategy are mentioned as significantly affecting test anxiety. The way individuals think about a test remarkably influences the level of test anxiety they experience. In this regard, cognitive reappraisal in which the individual reassesses the anxiety-evoking situation is an adaptive strategy to cope with test anxiety. On the other hand, suppression is claimed to have a worsening effect on test anxiety. Although the suppressors report experiencing low levels of test anxiety, studies

show that what they experience is actually the opposite of what they report. Furthermore, emotion regulation, disregarding the strategy that is used, is found to decrease negative affect and test anxiety. Yet, cognitive strategies such as cognitive reappraisal are believed to me more effective in reducing test anxiety.

Despite the significance of the relationship between rumination and test anxiety, the literature can only provide a limited source of studies on this topic. However, the existing studies have revealed findings that emphasize the importance of this relationship. The mentioned studies show that test anxiety is positively correlated with rumination. High test-anxious individuals are more likely to experience prolonged amounts of negative rumination, besides they tend to ruminate on their negative mood even after the test taking situation is over.

Finally, a large body of evidence supported the difference between genders with respect to test anxiety. Despite the existence of studies that found no significant relationship between gender and test anxiety, in most studies females are concluded to be more likely to experience more test anxiety compared to males. Furthermore, the gender factor is found to have a mediating effect on the relationship between test anxiety and academic performance.

In the light of the existing research on the related topic, the current study brought the mentioned variables together in order to investigate the relative effect of gender, self-control, emotion regulation, and rumination on test anxiety. Based on the literature, high level of test anxiety is expected to be experienced mostly

by females who have low level of self-control, tend to suppress their emotions and passively focus on their negative mood. On the other hand, low level of test anxiety is supposed to be seen mostly in males who have high self-control, cognitively reappraise their emotions and tend to reflectively ruminate on their negative mood. While examining the relative relationship of those variables to test anxiety, suppression and the two ruminative response styles need to be approached with caution.

CHAPTER III

METHOD

In this correlational study four independent variables were studied: (1) gender, (2) self-control, (3) emotion regulation strategies, and (4) rumination. The criterion variable will be the test anxiety level of the participants. In the light of the related literature, the following research question was sought: how does the degree of match between gender, self-control, emotion regulation strategies, and rumination relate to test anxiety? The following auxiliary research questions were also included in the scope of the current study: (1) is there a gender difference in test anxiety?, (2) is there a relationship between self-control and test anxiety?, (3) is there a relationship between emotion regulation strategies and test anxiety?, (4) is there a relationship between rumination and test anxiety?

For this research gender, self-control level, emotion regulation strategies, and rumination tendencies were gathered in order to examine their relative relationship with test anxiety.

3.1. Participants

Initially, one hundred eighty-nine students participated in the study. Yet, one of the participants' scores was excluded from the study due to an unanswered part in the scales. Therefore, the final number of the participants is one hundred eighty-eight. The participants were reached by convenient sampling procedure. The participants were among the university students who study in preparatory class. The participants were determined to be in the transition phase to the university due to the critical characteristic of this period. As Srivastava, McGonigal, Tamir and Gross (2009) stated, the students who are in their first year at university face many circumstances in which they experience anxiety and may attempt to utilize regulation strategies. In this period, individuals go into an environment which they are not accustomed to and thus the individuals are expected to deal with emotional and mental processes more than before. In addition, in this stage of their education tests are of high importance for the students in that the tests they take in this class are the steps that will carry them to their major education at university. Consequently, because of the aforementioned characteristics of this phase which is defined as emotionally intense and disorienting (Christie & Dinham, 1991) and the importance of tests in this class this group of participants was selected as the sample.

The sample size is determined by taking into consideration that for multiple regression the adequate size of the sample would be $N>50 + 8m$ (m= number of independent variables) (Tabachnick & Fidell, 2001). For six independent

variables approximately a hundred participants were needed to ensure a reasonable sample size. Although fewer participants for multiple regression were considered to be sufficient, regarding the potential missing data, a total of 188 students enrolled in the preparatory school of a private university in Ankara were reached. Of the total participants, 64 students (34%) were male and 124 students (66%) were female. The age of the participants ranged between 17 to 33 (M=18.45, SD= 1.33). Among the participants in this study, 27 of them were law students (14.4%), 33 of them were psychology students (17.6%), 10 were statistics students (5.3%), 15 were psychological counseling and guidance students (8%), 12 were business administration students (6.4%), 40 were political sciences and international relations students (21.3%), 4 were international trade (2.1%), 6 were medicine students (3.2%), and 41 were nursing students (21.8%). The departments that the participants stated indicate the departments that they would study the following year. Table 1.1 shows the demographic characteristics of the participants.

Table 1.1.

Frequency Table of the Participants for Gender and Department

Characteristics	*n*	*%*
Gender		
male	64	34
female	124	66
Major of Study		
law	27	14.4
psychology	33	17.6
statistics	10	5.3
counseling	15	8
business administration	12	6.4
political sciences	40	21.3
international trade	4	2.1
medicine	6	3.2
nursing	41	21.8

n=188

3.2. Instrumentation

For this study, demographic information, self-control level, emotion regulation strategies, rumination tendencies and test anxiety level of the participants are obtained. For this purpose four scales and a demographic form are utilized. These scales are the Test Anxiety Inventory (Spielberger, 1980), the Self-Control Scale (Tangney et al., 2004), the Emotion Regulation Questionnaire (Gross & John, 2003), and the Ruminative Response Scale (Treynor et al., 2003).

3.2.1. Demographic Information Form

Information about the age and the gender of the participants were obtained by the demographic information form. This form also inquires which major the preparatory students would study the following year.

3.2.2. The Test Anxiety Inventory (TAI)

The Test Anxiety Inventory is one of the scales that were used. It was developed by Spielberger (1980) and adapted to Turkish by Öner (1990). It consists of a 5-point Likert type scale. Scores on the TAI can range between 20 and 80 and higher scores indicate higher levels of test anxiety. Internal consistency and homogeneity coefficient for the original form of the inventory was .92 and item-total correlation coefficient was .60. Relationships between scores on the TAI and those on measures of anxiety and personality were examined (Spielberger, 1980). In the same study, the TAI was found to have positive correlations with trait anxiety (.48), prior to testing state anxiety (.51), anxiety scale of the MMPI (.27-.46) and with issues on the student problem check list (.27-.60). For the Turkish version of the Test Anxiety Inventory, KR-20 formula was used to determine internal consistency and homogeneity of the items. These coefficients ranged between .73 and .89 (Öner 1990). The value of Cronbach's alpha for this sample was computed as .94.

3.2.3. The Self-Control Scale (SCS)

The Self-Control Scale which is another scale that was used in the study was developed by Tangney et al. (2004) to measure individual differences in dispositional self-control. It assesses the ability to self-control in four domains: thoughts, emotions, impulses, and performance (Duckworth & Seligman, 2005). Its purpose is to measure the ability of the people to control their impulses, change their thoughts as well as emotions, and to stop undesirable behavioral tendencies (Finkenauer, Engels, & Baumeister, 2005). It is a 36-item scale, the items of which are scored on a 5-point Likert type scale (1, being not at all like me, and 5, being very much like me). The highest score is 180 which reflects high self-control whereas the lowest score is 36 reflecting low self-control. SCS was adopted to Turkish by Coşkan (2010) and internal consistency of the scale was reported as .89 by the researcher. For the current study, the internal consistency was found as .97.

3.2.4. The Emotion Regulation Questionnaire (ERQ)

The Emotion Regulation Questionnaire was the third measurement. It is a 10-item scale asking the participants to rate how they generally try to control their feelings or emotional expressions (Gross & John, 2003). The scale was developed by Gross and John (2003) and adapted to Turkish by Yurtsever (2004). The scale has two subscales as cognitive reappraisal (6 items) and expressive suppression (4 items). Cognitive reappraisal scores range between 6

and 42, whereas suppression scores range between 4 and 28. High scores in cognitive reappraisal subscale indicate that participants tend to utilize cognitive reappraisal as an emotion regulation strategy while high scores in suppression subscale indicate that suppression is utilized as an emotion regulation strategy. Cognitive reappraisal is defines as "a form of cognitive change that involves construing a potentially emotion-eliciting situation in a way that changes its emotional impact" (Lazarus & Alfert, 1964) and expressive suppression is defined as "a form of response modulation that involves inhibiting ongoing emotion-expressive behavior" (Gross & Levenson, 1993). The Turkish version of the questionnaire obtained acceptable alphas for both suppression (α=.82) and reappraisal (α=.88), besides the Pearson correlation between cognitive reappraisal and suppression was -.52 ($p<.01$) (Yurtsever, 2004). The internal consistency values were computed separately for both subscales. For the present sample, both the cognitive reappraisal and suppression subscales obtained satisfactory values as .91 and .84, respectively.

3.2.5. The Ruminative Response Scale (RRS)

The Ruminative Response Scale (Treynor et al., 2003) is the last instrument that was used in the study. There are 10 items in the scale which are scored on a 4-point Likert type scale, from 1 being "almost never" to 4 being "almost always". RRS measures ruminative tendencies. It consists of two subscales as reflection and brooding, both of which range between 5 and 20. Those who have high

scores in reflection subscale are assumed to be using reflection and those who have high scores in brooding subscale are assumed to be using brooding as a ruminative response style. For the original version, the coefficient alpha for Reflection subscale was .72 and for Brooding Subscale it was .77 (Treynor et al., 2003). The scale was adapted to Turkish by Erdur-Baker and Bugay (2012) and for the Turkish version of the scale Cronbach's alpha were computed as .77 for Reflection and .75 for Brooding subscales and the internal consistency coefficient for the total scale was .86 (Erdur-Baker & Bugay, 2012). In addition, for this study the alpha value for the brooding subscale was .80 and for the reflection subscale it was .75.

3.3. Procedure

After obtaining the ethics approval from Middle East Technical University Human Subjects Ethics Committee, the head of the preparatory school of the related university was contacted and the aim and the method of the research were presented. As the permission to collect data from the students was taken, four different scales were planned to be delivered to each student in the preparatory school. In order to prevent threats to internal validity, controlling data collector bias and implementation was necessary. Thus, it was required that the scales were administered by the same person, the researcher; and for this purpose the related permission was also taken from the head of the preparatory school.

Before the instruments were administered to participants, the purpose of the research was briefly explained to the students. There were no students in any classes who refused to participate in the research. The sets of scales were delivered to the participants after volunteer participation form was obtained from each of them. The participants were given 45 minutes to answer the questions. At the end of the administration of instruments, a post-participation information sheet was given to each participant so as to explain the purpose of the research one more time and thank them for their participation in the study at the same time. Contact information of the researcher was also given in the information sheet for the participations in case they have any questions afterwards.

3.4. Operational Definition of the Variables

Gender: This dichotomous variable is concluded through the demographic forms by the participants. They are defined as male or female.

Test Anxiety: Test anxiety scores of the participants are determined by Test Anxiety Inventory (Spielberger, 1980). High test anxious (HTA) participants refer to the ones who get a high score in this inventory and low test anxious (LTA) are the ones that get a low score in the inventory.

Self-Control: The total score of the Self-Control (Tangney et al., 2004) determines the self-control level of the participants. High scores indicate high self-control whereas low scores in the scale indicate low self-control level.

Cognitive Reappraisal: This variable is measured by Emotion Regulation Questionnaire (Gross & John, 1998). The cognitive reappraisal subscale of the questionnaire aims to determine whether the participant utilizes this emotion regulation strategy or not. High scores in the subscale indicate positivity whereas low scores indicate negativity.

Suppression: The other subscale of Emotion Regulation Questionnaire (Gross & John, 1998) is suppression. This subscale aims to determine if the participant suppresses his/her feelings to regulate feelings or not.

Brooding: It is measured by the brooding subscale of Ruminative Response Scale (Treynor et al., 2003). This subscale aims to conclude whether the participant tends to thinks negatively or anxiously about something. High scores in the subscale indicate positivity whereas low scores indicate negativity.

Reflection: Reflection, which refers to think something over to ease the negative mood, is measured by the reflection subscale of Ruminative Response Scale (Treynor et al., 2003). High scores in the subscale indicate positivity whereas low scores indicate negativity.

Rumination: The total score obtained from the Ruminative Response Scale (Treynor et al., 2003) determines the rumination level of the participant. High

score from the scale indicates that the participant has a high rumination level whereas low score indicates a low rumination level.

3.5. Data Analysis

In this correlational study, the relationship between the criterion variable which is test anxiety level of the participants and the independent variables which are gender, self-control level, emotion regulation strategies, and rumination tendencies of the participants is investigated. For this purpose, hierarchical multiple regression analysis is conducted. This analysis also enabled the researcher to investigate how much gender, self-control level, emotion regulation strategies, and rumination tendencies explain the differences in test anxiety level and to conclude which of the independent variables is the best variable explaining test anxiety. Firstly, Pearson Correlation was utilized in order to examine how much the variables correlated with each other. Then, hierarchical multiple regression procedure was conducted for the main analyses. The entrance order of the variables into the equation was determined according to the related findings in the literature and the correlation results.

For the analysis of the data, PASW statistical analysis program is utilized. Before the main analysis is conducted, the reliabilities of the scales were computed. After obtaining satisfactory alpha values for each of the scales, data has been checked for the missing data. Since missing data have been noticed through Missing Data Analysis (MDA), those scores which are missing are

estimated through Expectation Maximization (EM) by the analysis program. Expectation Maximization is seen as an appropriate way to deal with missing both because Tabachnick and Fidell (2001) suggested not deleting all cases with missing data as it might cause significant distortions in the body of data and also it is relied upon to give realistic estimates. Once missing data are handled, the assumptions of multiple linear regression are checked prior to the main analyses. The assumption checks are explained in detail in the results part of the study.

Finally, hierarchical multiple regression analysis is utilized in order to test the research questions. For this purpose, test anxiety is entered as the criterion variable and gender, self-control, cognitive reappraisal, suppression, brooding and reflection are entered respectively as independent variables to the regression analysis.

3.6. Limitations of the Study

In addition to the strengths of this study, there are a number of limitations that might have affected the presented results and the generalizability of the study. Firstly, the data were gathered from the self-report scales. Self-reports might confound the results since there might be a difference between the subjective and the objective evaluation of the individual. Although the scales obtained satisfactory internal consistency values, the social desirability factor might have affected the self-reports, causing a damage in the validity of the results.

The second limitation of the study is the sample which consists of preparatory school of a university. Although the sample group was intentionally chosen, it is a limitation prevents the study to be generalized throughout the university students. Thus, it can be concluded that the generalizability of the results is limited to the preparatory students in the participating university.

Finally, the method of the study could be considered as a limitation. As correlational method was utilized for this study, it is hardly possible to establish a cause and effect relationship between the independent and the criterion variables. Taking all the aforementioned limitations, the findings of the study should be read and evaluated accordingly.

CHAPTER IV

RESULTS

The existing studies about the variables that are included in the present study investigated the relationship between test anxiety and each of the variables separately. The previous studies indicate that rumination, emotion regulation strategies and self-control have independent significant effects on the test anxiety level that students experience. The present study gathered these variables together so as to explore their relative contributions to test anxiety. For the purpose of examining how well gender, self-control level, emotion regulation strategies, and rumination tendencies explain test anxiety hierarchical multiple regression analysis was conducted.

The results chapter compromises two sections. In the first section, preliminary analyses are presented. In this section, firstly, descriptive statistics of the variables that are included in the study are presented including the means and standard deviations of the criterion and independent variables. Then, correlations among the variables are mentioned. In the second section, independent variables in order of gender, self-control, emotion regulation strategies, and rumination tendencies were entered in hierarchical multiple regression to explain test anxiety.

4.1. Preliminary Analyses

4.1.1. Descriptive Statistics

Prior to conducting main statistical analyses, descriptive statistics of the independent and criterion variables were examined. The descriptive characteristics were investigated firstly for the whole sample as can be seen in Table 4.1., and secondly for each gender separately since each of the variables tend to have different implications for each gender. The relevant analysis is shared in the same table. As shown in the mentioned table that is related to the major study variables, means, and standard deviations are computed for the variables.

Table 4.1.

Descriptive Statistics and Gender Differences for the Independent and Criterion Variables of the Study

		male	female	
Variables	*M (SD)*	*M (SD)*	*M (SD)*	*t*
Test Anxiety	41.85 (12.80)	37.75 (10.98)	43.97 (13.19)	-3.43**
Self-Control	118.16 (32.52)	122.52 (28.11)	115.91 (34.47)	1.41
Cogn. Reappraisal	28.13 (8.52)	29.38 (8.02)	27.48 (8.73)	1.45
Suppression	14.90 (6.43)	14.52 (6.62)	15.10 (6.35)	-0.59
Brooding	11.66 (3.44)	10.94 (3.27)	12.03 (3.48)	-2.08*
Reflection	11.97 (3.42)	11.89 (3.57)	12.01 (3.36)	-0.22

n=64 (males) n=124 (females)
*Note: *p<.05; **p<.01, two-tailed.*

According to the results, participants' test anxiety scores averaged at *M*=41.85 with a standard deviation of 12.80, ranging from 20 to 76. Considering the data, it is seen that the scores obtained from the Self-control Scale has a mean of 118,16 (*SD*=32,52) ranging from 42 to 171. The emotion regulation strategies were computed for cognitive reappraisal and suppression separately. The scores for the former averaged at *M*=28,13 (*SD*=32,52) with a range between 6-42 whereas for the latter the mean score is *M*=14,90 (*SD*=6,43) ranging from 4 to 28. Finally the rumination tendencies were also examined independently and it has been concluded that the participants scored at an average of *M*=11,66 (*SD*=3,44) in the brooding subscale while scoring at an average of *M*=11,97 (*SD*=3,42) in the reflection subscale, both ranging between 5 and 20.

The descriptive statistics were also conducted for each gender in order to examine the difference between males and females in terms of the variables studied. Since, according to the related studies in the literature, males and females differ to a significant extend in respect to their self-control level, emotion regulation strategies they utilize, rumination tendencies they have and test anxiety they experience. Table 4.1 shows the descriptive statistics for each gender in the present study.

The mean scores, the standard deviation values and *t* values obtained from independent *t*-test can be seen in the table above. The assumptions of independent t-test were checked. In order to examine the normality assumption,

the histograms and Skewness and Kurtosis values were checked. Each of the histograms showed a normal distribution and all the Skewness and Kurtosis values were close to zero, thus it was concluded that the normality assumption was not violated. The assumption of homogeneity was examined by Levene's Test of Equality of Error Variance. This assumption was found to be violated for the variables of test anxiety and self-control, therefore for these variables the values of equal variances not assumed test are used. On the other hand, no violation of homogeneity assumption was found for the other variables and for these variables the values of equal variances assumed test are used. Besides, the assumption of independence is not also violated since the two groups can be considered as independent of one another. With regards to the results of independent *t*-test, significant gender differences was found in test anxiety ($t(186)=-3.43$, p=0.001, two-tailed) and brooding ($t(186)=-2.08$, $p<.05$, two-tailed). According to the results, females had higher scores both in test anxiety and brooding than males. The scores obtained from each gender that males' scores from test anxiety inventory averaged at $M=37.75$ ($SD=10.98$) whereas the mean score of females is $M=43.97$ with a standard deviation of $SD=13.19$. Brooding scores of the participants also seem to differ for males ($M=10.94$, $SD=3.27$) and females ($M=12.03$, $SD=3.48$).The results also show that males scored slightly higher in self-control scale and cognitive reappraisal subscale than females. On the other hand, suppression and reflection scores of males were slightly lower than those of females.

4.1.2. Correlation among Variables

The relationships among variables were examined by Pearson Correlation Coefficient. Table 4.2. shows the correlations among test anxiety, self-control, emotion regulation strategies, ruminative tendencies. It can also be inferred from the table that among the mentioned variable no significant relationship was found only between reflection and both of the emotion regulation strategies as suppression and cognitive reappraisal.

Table 4.2.

The Pearson Correlation Coefficients of the Study Variables

Variables	1	2	3	4	5	6
1. Test Anxiety	-	-.65**	-.65**	.26**	.45**	.15*
2. Self-Control		-	.78**	-.60**	-.46**	-.17*
3. Cognitive Reappraisal			-	-.53**	-.38**	-.12
4. Suppression				-	.22**	.10
5. Brooding					-	.62**
6. Reflection						-

*Note: *p<.05; **p<.01, two-tailed.*

When the correlation coefficients are considered, it is seen that test anxiety is correlated with each of the independent variables. Test anxiety is significantly and negatively correlated both with self-control and cognitive reappraisal with the same coefficient value (r= -.65, p<.01). On the other hand, it has a positive

significant correlation with suppression and brooding (r= .26, p<.01; r= .45, p<.01, respectively) as well as with reflection (r= .15, p<.05). Similarly, self-control was found to be significantly correlating with every variable in study.

4.2. Assumption Checks for Multiple Regression Analysis

For multiple regression analysis, it is necessary to check five assumptions so as to rely on the estimation of the significance that is concluded by the study. In order to ensure the trustworthiness of the results the assumptions of normality, linearity, independence of errors, homoscedasticity, and multicollinearity are checked. The normal distribution of the variables indicate that the relationships are not distorted; thus by the skewness and kurtosis values the assumption of normality is checked. It is seen that among all variables the highest and the lowest skewness values are .73 and -.80, respectively; besides the highest and the lowest kurtosis values are -.13 and -1.18, respectively. Thereby, as it is suggested by Tabachnick and Fidell (2001) it can be concluded that the normality assumption is not violated since all the values are close to zero (-3.00<p<3.00). Normal distribution of the variables is also examined by frequency histograms and all the histograms of the variables show a normal distribution. In addition, the P-P plots that are checked for the normality assumption show that the variables are normally distributed as not deviating importantly from the straight line. When the residual plots are examined, it is also seen that residuals are piled up in the center of plot as Tabachnick and Fidell (2001) suggested to be.

The relationships that are obtained by multiple regression need to be linear in nature so as to obtain accurate relationship estimations between the criterion and the independent variables. Although previous research on each of the relationship between variables indicate linear relationships as has been discussed in the literature part, the scatterplot for test anxiety (criterion variable) was also examined for the linearity assumption. The scatterplot shows that the linearity assumption is not violated.

Tabachnick and Fidell (2001) suggests that when the error terms are independent, the value that is obtained from Durbin-Watson test is expected to be close to 2. The results of this test for the present analysis is 1.99, indicating that the assumption of independence of errors is also not violated.

The violation of homoscedasticity may weaken the analysis and consequently increase the possibility of a Type 1 error. Besides it may cause serious distortion of findings. For homoscedasticity assumption to be checked, the scatterplot of test anxiety is examined and it is concluded that this assumption is not violated since residuals are randomly scattered around the horizontal line. This relatively even distribution indicates that the residuals have constant variance whatever the value of the criterion variable is.

Multicollinearity problem may occur in the study when any two variables in the model measure the same relationship or the same quantity. In other words, it indicates high correlation between variables. Hair, Black, Babin, Anderson, and

Tatham (2006) state that the value of Variance Inflation Factor (VIF) needs to be smaller than 10 and tolerance value greater than .10. In the present study, the highest value for Variance Inflation Factor is 3.12 and the lowest tolerance .32. These values indicate that no multicollinearity is detected among the variables of this study.

4.3. The Relationship between Test Anxiety and Gender, Self-Control, Emotion Regulation, and Rumination

A hierarchical multiple regression was conducted in order to investigate the relative value of gender, self-control, emotion regulation strategies, and rumination on test anxiety. Independent variables were entered in the analysis in four steps. In the first step, gender was entered in the regression equation. Secondly, self-control variable was entered in the analysis. Then, emotion regulation strategies as cognitive reappraisal and suppression were entered. Lastly, two rumination tendencies as brooding and reflection were entered into the equation.

In table 4.3., unstandardized regression coefficients (*B*), standard error of the unstandardized regression coefficients (*SE B*), standardized regression coefficients (β), t-test statistics (*t*), and R square values (R^2) for the scores of the participants are presented.

Table 4.3.

Hierarchical Regression Results for Test Anxiety with respect to Gender, Self-Control, Emotion Regulation, and Rumination

Variables	R^2	ΔR^2	*B*	*SE B*	β	*t*
Model 1	.053	.053**				
Gender			6.23	1.92	.23	3.24**
Model 2	.449	.396**				
Gender			4.58	1.48	.17	3.10**
Self-Control			-.25	.02	-.63	-11.53**
Model 3	.535	.086**				
Gender			4.16	1.37	.15	3.04**
Self-Control			-.19	.03	-.47	-5.52**
Cogn. Reappraisal			-.59	.12	-.39	-4.86**
Suppression			-.47	.13	-.24	-3.73**
Model 4	.554	.027*				
Gender			3.64	1.36	.14	2.68**
Self-Control			-.16	.04	-.40	-4.56**
Cogn. Reappraisal			-.56	.12	-.38	-4.71**
Suppression			-.44	.13	-.22	-3.52**
Brooding			.69	.27	.19	2.56*
Reflection			-.21	.24	-.06	-.89

Note: n= 187. *$p < .05$; **$p < .01$

When the results that are shown in the table above are considered, it can be inferred that the regression equation with gender was significant (R^2=.053, adjusted R^2=.048, R^2 change=.053, $p < .01$, F (1,186)=10.50, $p < .01$). It is seen that approximately 5.3% of the variability of test anxiety is accounted for by gender. In the second model, self-control was entered to the model by controlling the effect of gender. The result of the second model indicate that this model, with a p value of zero to three decimal places, is statistically significant (R^2=.449, adjusted R^2=.443, F (2,185)=75.49, $p < .001$). The addition of the self-control variable in the second model results in a significant increase in the variance of test anxiety (R^2 change=.396, p=.000). In this model, self-control (β= -.63, t=-11.53, p=.000) appears to be significantly related to test anxiety and this variable is found to have a negative relationship with the criterion variable. In the third model, two emotion regulation strategies were entered to the model by controlling the effects of gender and self-control. The results of this equation show that the combination of gender, self-control and the two emotion regulation strategies accounted for 53.5% of the variability of test anxiety (R^2=.535, adjusted R^2=.525, R^2 change=.086, p=.000, F (4,183)=52.69, p = .000). Within the third model, it can be inferred that both cognitive reappraisal (β=-.39, t=-4.86, p = .000) and suppression (β=-.24, t=-3.73, p = .000) are negative independent variables of test anxiety while gender and self-control still remain significant.

Lastly, considering the fourth model it can be said that a combination of the six independent variables accounted for 55.4% of the total variance in test anxiety scores of the participants (R^2=.554, adjusted R^2=.539, R^2 change=.018, $p < .05$, F (6,181)=37.40, p = .000). Multiple regression coefficient was also significant (R=.74, p <.05) for the model. In other words, the linear combination of independent variables significantly related to test anxiety scores of the participants. The results of standardized regression coefficients for the last model show that brooding (β=.19, t=2.56, p<.05) is concluded to positively relate to test anxiety, however, reflection within this model does not seem to be significantly related to test anxiety. With regard to the fourth model that involves all the six independent variables, it can be said that all the variables except reflection are significantly related of test anxiety. Moreover, as previously assumed, among the variables in this model self-control (β= -.40, t=-4.56, p=.000) seemed to be as the best variable explaining test anxiety that is experienced by the participants.

CHAPTER V

DISCUSSION

In the present study, the relationships between test anxiety and the variables of gender, self-control, emotion regulation strategies, and rumination were investigated among the university preparatory students. Although studies that examined the relationship between test anxiety and each of the independent variable that were subject to the present study exist, there was a need in the literature for a study that combine these variables in order for understanding their relative effect. To this respect, the core purpose of the study was to examine the relative relationships of gender, self-control, emotion regulation strategies, and rumination with test anxiety and find out how well each of the mentioned independent variables contributes to explain variance of test anxiety.

This chapter consists of three sections in which the results of the study are summarized, the relations between test anxiety and the independent variables are discussed, suggestions for further research and potential implications for practice are mentioned by considering the shortcoming of the study.

5.1. The relations of Test Anxiety to Gender, Self-Control, Emotion Regulation, and Rumination

In this section, the results obtained from the current study are discussed relying on the existing literature. When the related literature is considered, test anxiety and each of the independent variables that are studied in the present research are claimed to be relating. According to the literature on the related subjects, test anxiety was found to have a significant relationship with gender (Hong & Karstensson, 2002; Yerin 2003; Chapell et al., 2005), self-control (Brackney & Karabenick, 1995; Bembenutty et al., 1998), emotion regulation (Gross, 1999; Davis, Stefano, & Schutz, 2008; Zlomke & Hahn, 2010), and rumination (Schachter, 2007; Grant & Beck, 2010). Among these variables, gender and self-control were previously studied together to understand test anxiety. In this study, Devito and Kubis (1983) studied with a sample of college students examined interrelationship of test anxiety and certain personality variables such as self-control. They concluded that the interrelationship of test anxiety and self-control was the same for both genders, nevertheless the study supported the verity that females experience higher test anxiety than males. Apart from the mentioned study, no studies that examined the relative relationship of the variables in this study to test anxiety exist in the literature.

The findings of the present study mostly revealed consistent results with the literature. For instance, the results indicate that low level of test anxiety is related to self-control and cognitive reappraisal. Besides, the finding from previous

studies about males having lower level of test anxiety compared to females is also supported in the current study. In contradistinction to the existing literature, in this study it has been found that suppression is also related to low level of test anxiety. In other words, based on the results of the current study it can be concluded that males who cognitively control their thoughts and emotions and act accordingly, and suppress their emotions are not much likely to experience test anxiety to a large extent. Hence, self-control, cognitive reappraisal, and suppression can be considered as protective factors.

Suppression in the suggested model is found to be related to low level of test anxiety, which is opposite to what was mentioned in the literature. Thus, although this factor can be seen as protective in the suggested model, it needs to be discussed with caution. This difference between the previous and current findings on suppression might be related to the discrepancy it leads between its actual experience and its expression. As Derakshan and Eysenck stated, individuals who suppress their emotions assume that they experience less negative affect although they indeed experience more. Therefore, what the individuals reported in this study might be different from what they actually experience as they only suppress their expression of negative affect but not the negative affect itself. In addition, suppression yielded discrepant results in the two analyses conducted for the current study. Contrary to the results of the main analysis, those who suppress their emotions were found to be more likely to experience high test anxiety according to the results of correlation analysis. This discrepancy that suppression factor led might be explained by its maladaptive

characteristic, in that the excessive use of suppression might lead the individual to experience more negative affect since it is maladaptive in nature. Hence, it might me claimed that although suppression seems to be a protective factor within the suggested model of the current study, in the long term it may lead the individual to experience more test anxiety.

Based on the results of the study, high level of test anxiety is mostly seen in females who have low level of self-control, do not regulate their emotions and tend to use brooding as a ruminative response style. The relationship of self-control and emotion regulation with test anxiety was also supported by the literature (Bembenutty et al., 1998; Gross, 1999). Although no studies could be found about the relationship between brooding and test anxiety, the finding of the current study could be expected in the light of the literature since brooding was assumed to be related to high test anxiety because of its maladaptive characteristic. Since in brooding, the individual takes a passive and self-critical stance towards the negative affect, he/she is less likely to reduce the experience of this affect. To this respect, low level of self-control, lack of cognitive reappraisal together with suppression, and brooding can be regarded as risk factors for test anxiety. Nevertheless, it would be beneficial to be mindful while discussing suppression.

Reflection, as a ruminative response style, was not found to be related to test anxiety within the suggested model of the present study. However, taking the related literature into consideration it had been expected that those who turn

inward to engage in cognitive problem solving strategies would be less likely to experience high level of test anxiety, since reflection is believed to be a rather adaptive coping strategy when it is compared with brooding. This discrepancy between the results of the present study and the findings in the existing literature might be due to the difference between the short term and long term effects of reflection, as Treynor and his colleagues (2003) claim that the use of reflection causes negative affect to be reduced not in the short term but in the long term.

As a conclusion, the results of the study revealed that gender, self-control, cognitive reappraisal, suppression, and brooding were significantly related to test anxiety. Among these variables, self-control and cognitive reappraisal were found to be the strongest factors that explain the variance in test anxiety. The results indicated that males who control their thoughts, behaviors and emotions and act accordingly are not likely to have high test anxiety, which means that these individuals possess protective characteristics. On the other hand, females who have low level of self-control, do not regulate their emotions and tend to brood on their negative mood are prone to experience high level of test anxiety. Therefore, individuals who possess the mentioned characteristics need to be the focus of prevention and intervention programs.

5.2. Implications for Practice

A great deal of the students together with candidates in several fields suffer from test anxiety, which makes it a prominent subject to be taken into consideration. The most conspicuous finding of the present study is the strong relationships of self-control and cognitive reappraisal with test anxiety. Since self-control has a strong correlation with test anxiety, those who are concerned with test anxiety should make a point of self-control. When the positive impact of self-control is considered, parents and caregivers can be suggested to teach this ability at a young age to their children since children can acquire self-control even at the age of 2 or 3 by learning the negative consequences of their outburst. Nevertheless, self-control can be improved at any age. Thus, especially counselors need to focus on enhancing self-control while dealing with high test anxious individuals. For this purpose, they might help the individuals to think about their ultimate goal rather than the difficulties that are caused by the current circumstances. Focusing on their plan as a whole and trying to see how their action contributes to their plan might also help the individual to improve self-control. Fujita, Trope, Liberman and Levin-Sagi (2006) mentioned that how the person construes or interprets an event remarkably affects self-control. Hence, cognitive reappraisal, which helps the individual to reassess the meaning of a situation that causes negative affect, may be helpful in improving self-control. Besides, in the current study it has been concluded that cognitive reappraisal is another factor that strongly correlates with test anxiety. Accordingly, counselors might consider

teaching cognitive reappraisal as an emotion regulation strategy to help the students, especially females, to overcome test anxiety.

Contrary to cognitive reappraisal; suppression, which is the other emotion regulation strategy that is subject to the present study, does not seem to have the same consistent relationship with test anxiety. The results of the correlation analysis reveal that those who tend to suppress their feelings or try to suppress their negative affect are more probable to experience test anxiety than those who do not suppress. Therefore, suppression can be viewed as a maladaptive emotion regulation strategy, which had better be shifted with cognitive reappraisal. Nevertheless, regression analysis revealed inconsistent results with those obtained from the correlation analysis. According to the regression results, when the relative relationship of the variables of the current study is considered, suppression seems to have a negative relationship with test anxiety. Thereby, the cases of those who suppress their feelings need to be approached with caution. Furthermore, self-reports about test anxiety of those who suppress their emotions need to be questioned, since what they report might be different from what they actually feel (Derakshan & Eysenck, 1997). Regarding this discrepancy, cognitive coping strategies might be a better choice to deal with test anxiety, regardless of the relationship of suppression. Zeidner (1998) also suggests cognitive restructuring in order to cope with test anxiety, which emphasizes the importance of cognitively dealing with emotions. As Spielberger and Vagg (1995) stated cognitively focused treatments might be an effective choice to treat test anxiety. Hence, cognitive behavioral therapies might be of great help in

order to help the individuals to alter their thoughts, feelings, beliefs and behaviors in a way that they desire. Within such therapies, as also suggested by Schmidt, Tinti, Levine, and Testa (2010), counselors might encourage cognitive reappraisal by highlighting the successful outcomes that are created by one's own efforts. For this purpose, the counselors might consider not only individual counseling but also group counseling.

The two styles of ruminative response led to different results about test anxiety. Brooding, which is a rather maladaptive ruminative response style, is found to be related to test anxiety. The positive correlation between them indicates that those who think passively but repeatedly on a situation are high in test anxiety. On the other hand, the current results revealed no significant relationship between reflection and test anxiety though reflection is believed to help negative affect to be decreased over time. In the light of the related study of Treynor et al. (2003), those who utilize reflection as a ruminative response style were expected to be low in test anxiety since these individuals are supposed to reduce their negative affect in the long-term. Yet, no such relationship is evidenced in the present study. Although reflection is not found to be relating to test anxiety when the model of the current study is considered, related studies on test anxiety suggest rumination to be dealt with as a whole. In order to help the individuals stop ruminating, alternative coping strategies such as adaptive emotion regulation strategies might be encouraged. The counselors might also help the individuals not to ruminate upon stressful events or their perceived incapability. For this

purpose, cognitive reappraisal or distraction might be considered among alternative coping strategies to be motivated.

The current study examined the factors of gender, self-control, emotion regulation, and rumination so as to understand their relationship with test anxiety. According to the results, this study supported the view that females are more likely to experience test anxiety. It can be defended that females are at more risk than males, herewith the aforementioned prevention and intervention strategies might rather target females.

All in all, in order for the counselors to help the individuals, test anxious people need to be directed to counseling services by the educators or the parents unless they are not aware of this need themselves. Then, necessary intervention programs can be prepared in the light of these findings. Besides, the educators, parents and also the students need to be informed about the characteristics and the associates of test anxiety so as to identify it. Relevant information about test anxiety might be shared via seminars or meetings.

5.3. Recommendations for Further Research

Test anxiety is a very broad and important area that needs to be investigated. Thus, several suggestions can be given for further research, one of which is on the sample of the study. The sample of the current study is reached by convenient sampling procedure, which narrows down the generalizability of the

findings. For the future studies, random sampling can be utilized to extend the generalizability of the study. For the sake of this purpose, the sample can be enlarged. The individuals that participated in this study consist of preparatory students in a college. However, students studying in other grades or from other universities might also be included in future studies. Furthermore, not only university students but also students from other schools can be examined because test anxiety is a factor that affects a wide scope.

Another suggestion would be about the type of measurement. In the present study, subjective measurements are used, which requires the researcher carefully interpret the results. For instance, for the "suppression" variable the literature suggests that what the individuals experience might differ from what they report (Derakshan & Eysenck, 1997). However, self-reports that are utilized in the study limits the researcher to rely on what is reported. Hence, objective measurements can be suggested to be used for further studies to obtain more dependable results. For the same purpose of more certain results, experimental studies can be conducted. This would be an instrumental way also in examining the causes of test anxiety since this correlational study does not provides cause and effect relationship between test anxiety and other variables that are studied.

Reflection within the mentioned variables of the study was not found to be a significant variable to explain test anxiety, although in the existing literature the adaptive characteristic of this factor in decreasing negative affect was mentioned. This discrepancy might be stemmed from the characteristics of the participants

or difference between the short term and long term effects of this factor since reflection is assumed to help the negative affect to be decreased in the long term but not the short term. Hence, for further research either the study might be duplicated with another group of participants or a longitudinal study might be conducted so as to find out the long term effects of reflection on test anxiety.

Other variables that are assumed to cause test anxiety might also be taken into consideration for further research. Related to the present study, other emotion regulation strategies in addition to cognitive reappraisal and suppression or self-regulated learning in addition to self-control can be included. As well as the variables that may cause test anxiety, variables that are affected by test anxiety needs to be considered. For instance, test performance or academic performance of the individuals might be examined since they are the factors that actually determine the importance of test anxiety. In summary, it might be useful idea to consider different associates of test anxiety for future studies.

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APPENDICES

APPENDIX A

SAMPLE ITEMS FROM TEST ANXIETY INVENTORY

(SINAV TUTUMU ENVANTERİ)

Yönerge: Aşağıda insanların kendilerini tanımlamak için kullandıkları bir dizi ifade sıralanmıştır. Bunların her birini okuyun ve genel olarak nasıl hissettiğinizi anlatan ifadenin sağındaki boşluklardan uygun olanının içini karalayın. Burada doğru ya da yanlış yanıt yoktur. İfadelerin hiçbiri üzerinde fazla zaman harcamadan yazılı ve sözlü sınavlarda nasıl hissettiğinizi gösteren yanıtı işaretleyin.

	Hemen Hiçbir Zaman	Bazen	Sık sık	Hemen Her Zaman
1. Sınav sırasında kendimi güvenli ve rahat hissederim	1	2	3	4
5. Bir sınav sırasında ne kadar uğraşırsam kafam o kadar çok karışır.	1	2	3	4
10. Önemli sınavlarda sinirlerim o kadar gerilir ki midem bulanır.	1	2	3	4
15. Sınavların beni bu kadar rahatsız etmemesini isterdim.	1	2	3	4
20. Sınavlar sırasında öylesine sinirli olurum ki aslında bildiğim şeyleri bile unuturum.	1	2	3	4

APPENDIX B

SAMPLE ITEMS FROM SELF-CONTROL SCALE

ÖZDENETİM ÖLÇEĞİ

Aşağıdaki cümlelerin her birinin sizin tipik özelliklerinizi ne kadar yansıttığını ölçekte işaretleyerek belirtiniz.

	Beni hiç yansıtmıyor				**Beni tamamen yansıtıyor**
1. Baştan çıkarmalara/ayartmalara karşı direnmekte başarılıyım.	1	2	3	4	5
6. Kendim için kötü olan bazı şeyleri eğlenceli ise yaparım.	1	2	3	4	5
12. İnsanlar beni fevri/dürtüsel olarak tanımlar.	1	2	3	4	5
18. Güvenilir biriyimdir.	1	2	3	4	5
24. Kolay kolay cesaretim kırılmaz.	1	2	3	4	5
30. Uzun süreli hedeflere ulaşmak için etkin bir şekilde çaba gösteririm.	1	2	3	4	5
36. Her zaman dakiğimdir.	1	2	3	4	5

APPENDIX C

SAMPLE ITEMS FROM EMOTION REGULATION QUESTIONNAIRE

DUYGU YÖNETİMİ ANKETİ

Size duygu dünyanız ve özellikle duygularınızı nasıl kontrol ettiğiniz (düzenleme ve başa çıkma) ile ilgili birkaç soru soracağız. Aşağıda yer alan maddeler duygu dünyanızın iki ayrı alanını içermektedir. Bunlardan biri içsel olarak nasıl hissettiğiniz ile ilgili olan duygusal deneyiminizdir. Diğeri ise konuşmalarınızda, mimiklerinizde ve davranışlarınızda duygularınızı nasıl gösterdiğiniz ile ilgili olan duygusal ifadelerinizdir. Aşağıdaki soruların bazıları bir diğerine benzer görünse de önemli açılardan farklılıkları vardır. Lütfen her bir ifadeyi aşağıdaki ölçeği kullanarak cevaplayınız:

1----------2----------3----------4----------5----------6----------7

Hiç Katılmıyorum **Biraz** Kararsızım **Biraz** Katılıyorum **Kesinlikle**
Katılmı- katılmı- katılıyorum katılıyorum
yorum yorum

1. ____ Olumlu duygularımın fazla olmasını istersem (mutluluk veya eğlence) düşündüğüm şeyi değiştiririm.

4. ____ Olumlu duygular hissettiğimde onları ifade etmemeye dikkat ederim.

6. ____ Duygularımı ifade etmeyerek kontrol ederim.

7. ____ Olumlu duygularımın fazla olmasını istediğim zaman duruma ilgili düşünme şeklimi

değiştiririm.

9. ____ Olumsuz duygular hissettiğimde onları ifade etmediğimden emin olmak isterim.

APPENDIX D

SAMPLE QUESTIONS FROM RUMINATIVE RESPONSE SCALE

RUMİNASYON ÖLÇEĞİ

Aşağıdaki ifadelere katılıp katılmadığınızı verilen derecelendirmeyi göz önüne alarak işaretleyiniz.

1= Hiçbir zaman, 2= Bazen, 3= Çoğunlukla 4=Her zaman

1. ____ "Bunu hak etmek için ne yaptım" diye ne kadar sık düşünüyorsun?

4. ____ Bir köşeye çekilip "Neden bu şekilde hissediyorum" diye ne kadar sık düşünüyorsun?

6. ____ Son zamanlarda yaşadığın olaylar hakkında "Keşke daha iyi sonuçlansaydı" diye ne kadar sık düşünüyorsun?

7. ____ "Niye benim problemlerim var da, diğer insanların yok" diye ne kadar sık düşünüyorsun?

9. ____ Kişilik özelliklerini analiz edip, "Kendimi niye böyle üzgün hissediyorum" diye ne kadar sık düşünüyorsun?

APPENDIX E

TEZ FOTOKOPİ İZİN FORMU

ENSTİTÜ

Fen Bilimleri Enstitüsü ☐

Sosyal Bilimler Enstitüsü ☐

Uygulamalı Matematik Enstitüsü ☐

Enformatik Enstitüsü ☐

Deniz Bilimleri Enstitüsü ☐

YAZARIN

Soyadı : .....

Adı : .....

Bölümü : .....

TEZİN ADI (İngilizce) :

.....
.....
.....

TEZİN TÜRÜ : Yüksek Lisans ☐ Doktora ☐

1. Tezimin tamamı dünya çapında erişime açılsın ve kaynak gösterilmek şartıyla tezimin bir kısmı veya tamamının fotokopisi alınsın. ☐

2. Tezimin tamamı yalnızca Orta Doğu Teknik Üniversitesi kullancılarının erişimine açılsın. (Bu seçenekle tezinizin fotokopisi ya da elektronik kopyası Kütüphane aracılığı ile ODTÜ dışına dağıtılmayacaktır.) ☐

3. Tezim bir (1) yıl süreyle erişime kapalı olsun. (Bu seçenekle tezinizin fotokopisi ya da elektronik kopyası Kütüphane aracılığı ile ODTÜ dışına dağıtılmayacaktır.) ☐

Yazarın imzası ..... Tarih .....