

THE EFFECTS OF SADNESS AND DIFFICULTIES IN EMOTION REGULATION
ON EMOTIONAL EATING IN INDIVIDUALS WITH EXERCISE ADDICTION:
AN EXPERIMENTAL STUDY

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JULY, 2022

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BY

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PLAGIARISM

I hereby declare that all information in this document has been obtained and presented in accordance with academic rules and ethical conduct. I also declare that, as required by these rules and conduct, I have fully cited and referenced all material and results that are not original to this work.

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ABSTRACT

The present study aimed to examine the effects of sadness and difficulties in emotion regulation on emotional eating in individuals with exercise addiction. The first part of the study recruited 587 participants from exercisers. The sample for the second part of the study consisted of 85 exercisers. In the study, an experimental method of observing food choices following a mood induction procedure was used. Also, the demographic information form, the Exercise Dependence Scale-21, Difficulties in Emotion Regulation Scale, The SCOFF Questionnaire, and the Visual Analog Scale were administered. Wilcoxon signed-rank test was used to test the effectiveness of the mood induction procedure. Then a chi-square test was conducted to examine the relationship between the mood condition and participants' food choices. Finally, binary logistic regression analysis was run to examine the predictors of emotional eating. Results demonstrated that the autobiographical recall method was effective in arousing the desired mood in participants. However, it was found that there was no significant relationship between participants' mood condition and their food choices. Moreover, sadness, difficulties in emotion regulation, and exercise addiction did not significantly predict emotional eating. The clinical implications, limitations, and recommendations for future research were discussed.

Key words: Emotional Eating, Difficulties in Emotion Regulation, Exercise Addiction

ÖZET

Bu çalışma, egzersiz bağımlılığı olan kişilerde üzüntü ve duygu düzenleme güçlüklerinin duygusal yeme üzerindeki etkilerini incelemeyi amaçlamıştır. Çalışmanın ilk bölümüne, düzenli egzersiz yapan 587 katılımcı katılmıştır. Araştırmanın ikinci bölümünün örneklemini ise 85 kişi oluşturmuştur. Çalışmada duygudurum yüklemeyi takiben yiyecek seçimini gözlemlemek için deneysel bir yöntem kullanılmıştır. Ayrıca demografik bilgi formu, Egzersiz Bağımlılığı Ölçeği-21, Duygu Düzenlemede Güçlükler Ölçeği, REZZY Yeme Bozuklukları Ölçeği ve Görsel Analog Ölçeği uygulanmıştır. Duygudurum yükleme yönteminin etkinliğini test etmek için Wilcoxon işaretli sıralar testi kullanılmıştır. Daha sonra duygudurum koşulu ile katılımcıların yiyecek seçimleri arasındaki ilişkiyi incelemek için ki-kare testi yapılmıştır. Son olarak, duygusal yemenin yordayıcılarını incelemek için ikili lojistik regresyon analizi yapılmıştır. Sonuçlar, otobiyografik hatırlama yönteminin katılımcılarda arzu edilen duygudurumu uyandırmada etkili olduğunu göstermiştir. Ancak, katılımcıların duygudurum koşulları ile yiyecek seçimleri arasında anlamlı bir ilişki olmadığı bulunmuştur. Ayrıca, üzüntü, duygu düzenlemedeki zorluklar ve egzersiz bağımlılığı, duygusal yemeyi anlamlı olarak yordamamıştır. Klinik çıkarımlar, çalışmanın kısıtlılıkları ve gelecek araştırmalar için öneriler tartışılmıştır.

Anahtar kelimeler: Duygusal yeme, Duygu Düzenlemede Güçlükler, Egzersiz Bağımlılığı

To my dear grandfather...

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1. INTRODUCTION

1.1. Exercise Addiction

Regular exercise has been shown to benefit both physical and mental well-being (Berczik et al., 2012). However, some studies showed that excessive exercise behavior can have harmful consequences such as physical injury, neglect of daily obligations, and experiencing negative emotions in the absence of exercise (Egorov & Szabo, 2013; Freimuth et al., 2011; Lichtenstein & Hinze, 2020; Morgan, 1979; Szabo, 1995). When exercise becomes addictive, people tend to disregard the negative consequences of this behavior and, they develop tolerance and withdrawal (Freimuth et al., 2011). Exercise becomes more of an obligation than a pleasurable experience (Egorov & Szabo, 2013). People who develop exercise addiction lose control of their habits and place exercise at the center of their lives. As a result, exercising diverts time away from other critical activities, impairing everyday functioning (Freimuth et al., 2011). In this regard, exercise addiction is recognized as a behavioral addiction, along with other addictions such as game addiction, internet addiction, and shopping addiction (Hausenblas & Symons Downs, 2002a). Behavioral addictions show similar characteristics to substance addictions and over time, the person develops an irresistible desire to engage in initially rewarding daily activities, and such behavioral over-involvement impact daily life negatively (Black, 2013; Grant et al., 2010).

While exercise addiction affects a small percentage of the general population, it is rather common among exercisers (i.e., individuals who exercise at least weekly) (Monok et al., 2012). In terms of the prevalence of exercise addiction in the general population, it has been estimated that non-dependent-symptomatic cases (i.e., those who report symptoms of exercise addiction but are not considered in the risk category

for exercise addiction) account for between 6% and 10% of the population. On the other hand, the rate ranges from 38 to 68 percent among exercisers (Monok et al., 2012). Whereas the rate of those at risk for exercise addiction is around 0.3-0.5 percent in the general population, it varies between 1.9 and 3.2 among those who exercise (Monok et al., 2012).

In 1990, Morris et al. conducted a study to investigate the effects of withdrawal from regular running. In this study, it was discovered that the group that took a break from running for two weeks in the middle of a 6-week study showed withdrawal symptoms and more depressive symptoms than the control group that continued a normal running routine. These symptoms included somatic symptoms, anxiety, and sleep problems. This was one of the first studies to show that exercise behavior might be problematic and addictive. However, the debate over the definition of exercise addiction continues, and it has not been yet recognized as a psychological disorder (Egorov & Szabo, 2013). In the literature, there are different definitions of exercise addiction, and it has been named as exercise dependence, excessive exercise, compulsive exercise, and obligatory exercising (Berczik et al., 2012; Hausenblas & Symons Downs, 2002a; Meyer et. al. 2008). Hausenblas and Downs proposed the definition of exercise dependence as a craving for recreational physical activity that leads to uncontrollable excessive exercise behavior with some physiological and/or psychological symptoms (2002a). They suggested that the operational definition of exercise dependence can be based on the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5; American Psychiatric Association, 2013) diagnostic criteria for substance addiction. Accordingly, those criteria for exercise addiction include tolerance (i.e., increasing the amount of activity to get a sense of accomplishment), withdrawal (i.e., experiencing negative consequences, such as

anxiety, in the absence of exercise), intention effects (i.e., exceeding the intended amount of time while exercising), loss of control (i.e., failed attempts to reduce exercise level), time (i.e., expending an excessive amount of time on exercise), conflict (i.e., reduction of time devoted to other activities due to excessive exercise), and continuance (i.e., continuing to exercise despite knowing the negative consequences) (Hausenblas & Symons Downs, 2002a).

It is important to distinguish primary exercise addiction from secondary exercise addiction (Berczik et al., 2012). In primary exercise addiction, excessive exercise is the major issue in the lives of those who are affected, and this maladaptive behavior presents as a behavioral addiction (Berczik et al., 2012). Secondary exercise addiction, on the other hand, is an addiction that developed as a result of another psychological dysfunction. This means that exercise is being used to achieve another purpose. In this case, the etiology of exercise addiction is different from the first. Eating disorders are often the psychological condition that precedes secondary exercise addiction (Berczik et al., 2012). Although primary and secondary exercise addiction can be distinguished theoretically, the interaction between eating and exercise behavior in everyday life can be far more complicated. Hence, it is important to examine the relationship between these two behaviors closely.

1.2. Exercise Addiction and Disordered Eating Behaviors

Exercise addiction is frequently associated with eating disorders and disordered eating behaviors. So much so that the prevalence of exercise addiction in people with eating disorders ranges from 30% to 70% (Davis et al. 1997; Goodwin et al., 2012; Meyer et al., 2011; Meyer et al., 2008; Mond et al, 2004). Several studies have found that persons who are addicted to exercise have higher levels of eating problems (Peñas-Lledó et al., 2002; Mond et al., 2006; Mond, & Calogero, 2009), and

this is also valid in the absence of an eating disorder (Elbourne & Chen, 2007). Mond et al. (2004; 2006; 2009) discovered that feeling guilty after skipping an exercise session and exercising to lose weight are the components most connected with eating pathology. Elbourne and Chen suggested that exercise addiction and eating pathology are closely related to each other and this is a dynamic process (2007). This means that if exercise addiction is considered as a spectrum, where people are on the spectrum will change the manifestation of eating disorder symptoms.

Meyer and colleagues suggested that eating pathology is a key component of exercise addiction development and maintenance (2011). It has been proposed that there is a reciprocally reinforcing relationship between exercise addiction and eating pathology. Accordingly, there is a link between people exercising to shape their bodies and increasing anxiety over this issue as they become more concerned about their bodies, and those behaviors reinforce one other in this way (Meyer et al., 2011). This point of view contends that exercise addiction is not a symptom of eating disorders and that there is a dynamic interaction between the two. However, studies to date have been lacking in clarifying the relationship between exercise addiction and disordered eating behaviors.

1.3. Emotional Eating as a Disordered Eating Behavior and Its Relationship with Negative Emotions and Emotion Regulation Difficulties

Emotional arousal is well known to lead to some changes in eating behavior. Hence, the relationship between eating and emotions has been extensively researched in various studies (Levitan & Davis, 2010; Macht & Simons, 2000; Wallis & Hetherington, 2008). Emotional eating is one of the concepts that evolved as a result of those studies, and it has been defined as a pattern of eating that is preceded by

negative emotions (Waller & Osman 1998; Macht & Simons, 2000). Although some research indicates that emotional eating is overeating in response to unpleasant emotions, it is now widely accepted that emotional eating is more closely associated with consuming high-calorie and palatable foods such as chocolate, crisps, and cookies. In other words, emotional eating is characterized by the content of the foods chosen rather than the quantity changes in eating behavior (Kemp et al., 2013; Levitan & Davis, 2010; Macht, 2008).

In psychiatric nomenclature, emotional eating has not been recognized as a disorder yet, but it is widely accepted as a disordered eating behavior (İnalkaç & Arslantaş, 2018). Moreover, it is not specific to certain eating disorders but can occur across the entire spectrum of eating disorders (Bourdier et al., 2018; Ricca et al., 2009). Starting from the assumption of binge eating episodes are driven by negative emotions, Ricca et al. discovered that when emotional eating scores increase, so does the frequency and/or severity of binge eating episodes, through the full spectrum of binge eating behavior (2009). In another study, the same association was found for overweight patients with binge eating disorder (Masheb & Grilo, 2006). On the other hand, Polivy and Herman pointed out that emotional eating can be evident in restrained eaters as well (1999). Accordingly, when chronic dieters encounter negative emotions, they eat to attribute their negative experience to their eating behavior, or they use food to distract themselves from their distress. In line with that, another study found that restrained eaters are more likely to engage in emotional eating than non-dieters (Lindeman & Stark, 2001). Emotional eating is also linked to bulimic tendencies (Waller & Osman, 1998), night eating syndrome (Nolan & Geliebter, 2012), weight gain and, increased risk for obesity (van Strien, 1996; van Strien, 2018; Waller & Osman, 1998). Moreover, emotional eating is highly prevalent in individuals

with eating disorders as well as in "normal eaters" (Match, 2008; Nguyen-Rodriguez et al., 2009).

Although some researchers imply that women are more prone to emotional eating (Larsen et al., 2006; Sevinçer & Konuk, 2013), this is still a controversial topic, especially since eating disorders are more commonly investigated in women. In large-scale research conducted with adolescents, it was discovered that both girls and boys showed similar levels of emotional eating behavior, with no significant gender differences (Nguyen-Rodriguez et al., 2009). When compared to other related factors, gender has a minor impact (Macht & Simons, 2000). Different studies have shown that emotional eating is associated with high levels of stress, anxiety, depression, and alexithymia (İnalkaç & Arslantaş, 2018; Larsen et al., 2006; Sevinçer & Konuk, 2013). In addition, adolescents are subjected to emotional eating as well as adults.

Emotional eating might be not only a risk factor for the development of eating disorders but also the outcome of the underlying psychological issues that lead to eating disorders (Lindeman & Stark, 2001). For instance, to explain the psychological aspects of obesity, Bruch developed the psychosomatic theory explaining emotional eating (1964). Accordingly, negative emotions may increase one's desire to eat, and this eating pattern can be repeated as needed to relieve unpleasant feelings. Their argument of Bruch was confirmed by another study suggesting that eating certain foods can be used as a way of regulating emotions (Macht & Simon, 2000). When facing emotional distress, it becomes difficult to monitor and control one's food intake. At such moments, people may resort to emotional eating. Here, emotional eating is used to relieve negative emotions rather than to meet the need for physical hunger (Kemp et al., 2013). Consuming certain foods when experiencing negative emotions may lessen the emotional intensity (Macht & Simons, 2000) and provide a

sense of relief from negative emotions (Leehr et al., 2015). According to Macht and Simons (2000), if eating is successfully utilized to cope with emotions, this practice may become habitual. Emotional eating hence can be a controlled strategy to regulate emotions or a somewhat automatic process. In other words, people may purposefully eat certain foods to alter their emotions, or they may do so unconsciously to some level (Macht & Simons, 2000). Individuals may consume unhealthy foods to reduce unpleasant feelings and promote positive emotions. Emotional eating is therefore both negatively and positively reinforced (Kemp et al., 2013).

Therefore, what drives emotional eating is not the negative feeling itself, but how it is coped with it. In a study, when emotion-oriented coping and avoidance distraction were not taken into account, no significant relationship was found between emotional eating behavior and negative affect. Accordingly, researchers concluded that people who engage in emotional eating may lack effective strategies to regulate their emotions (Spoor et al., 2007). However, it might not be claimed that all negative emotions would result in a similar shift in eating behavior because which negative emotions contribute to emotional eating is still controversial (Schneider et al., 2012). For example, Macht (2008) suggested that high-arousal or powerful emotions such as fear may diminish the amount of food consumed. Sadness, on the other hand, has been linked to emotional eating in many studies. For instance, it was discovered that the sadness induced in the laboratory environment caused participants to engage in emotional eating (Macht et al., 2002; Meule et al., 2019; Tan & Holub, 2018; van Strien et al., 2013). It is also important to draw attention to the difference between negative emotions and positive emotions. According to research, pleasant emotions such as joy can improve the enjoyment that we get from what we eat and allow us to choose healthier foods (Macht, 2008).

Studies have stressed the relevance of difficulties in emotion regulation as a transdiagnostic phenomenon throughout the eating disorder spectrum (Brockmeyer et al., 2014; Fairburn et al., 2003; Prefit et al., 2019). Emotion regulation is a process in which people influence their emotions and the way they feel and express their emotions (Gross, 1998). Emotions can be problematic depending on their type, the context in which they are experienced, and their length or intensity. According to Gross, when individuals' emotions become problematic, they strive to alter them intentionally or automatically (1998). Emotion regulation attempts can be engaged at any stage of the emotion generative process (i.e., before or after the emotional response is elicited) and these attempts can alter one or more of the behavioral, experiential, or physiological dimensions of emotions (Gross & Thompson, 2007). Emotion regulation strategies can be used to increase, decrease, or maintain both positive and negative emotions (Gross, 2015).

People may use many different strategies to regulate their emotions. Some strategies are accepted as adaptive such as reappraisal (i.e., a type of cognitive shift in which a potentially emotionally arousing circumstance is construed in such a manner that its emotional impact is altered), while some of those strategies are considered maladaptive such as suppression (i.e., a type of response modulation in which ongoing emotion expression is inhibited) (Gross, 1998; Gross & John, 2003). However, the adaptiveness of emotion regulation strategies cannot be evaluated in isolation from the context in question, as well as one's goals and objectives (Koole, 2009). An emotion regulation strategy should provide the desired emotional alteration, but at the same time should not have long-term negative implications for the individual (Campbell-Sills et al., 2006). Also, Gratz and Roemer suggested that emotion regulation is not equated with emotion control or emotion modulation; it also

includes awareness, understanding, and acceptance of emotions, the capacity to act according to long-term goals, and the ability to employ emotion regulation strategies flexibly (2004).

It has been suggested that having difficulties in emotion regulation is not limited to specific eating disorders but may contribute to all disordered eating behavior across the spectrum. For instance, Brockmeyer et al. found that people with all subtypes of eating disorders reported considerably more difficulties in emotion regulation than healthy controls (2014). Emotional eating is one of the disordered eating behaviors that may be associated with emotion regulation difficulties. The outcomes of a study with bariatric patients suggested that difficulties in emotion regulation may have a role in predicting emotional eating (Taube-Schiff et al., 2015). Similarly, Crockett et al. discovered in an experimental study that emotion regulation difficulties predicted eating in response to negative emotions (2015).

All the information mentioned above underlines the significance of disclosing the relationship between difficulties in emotion regulation and emotional eating for a better understanding of emotional eating behavior.

1.4. The Relationship between Exercise Addiction and Emotion Regulation Difficulties

As mentioned above, a constant inability to regulate emotions may substantially affect individuals' psychological well-being, and chronic deficiency in emotion regulation have the potential to contribute to many types of psychopathologies (Koole, 2009). People who have difficulty in regulating their emotions may experience stress more frequently and for longer periods and this may cause people to develop anxiety and mood disorders such as major depressive

disorder, generalized anxiety disorder, and social anxiety disorder (Aldao et al, 2010; Campbell- Sills & Barlow, 2007; Mennin et al., 2007). Also, difficulties in emotion regulation have been found related to post-traumatic stress disorder (Ehring & Quack, 2010), and borderline personality disorder (Salsman & Linehan, 2012). Addictions, both substance-related addictions and behavioral addictions, are among the pathologies related to emotion regulation too. These addictions include alcohol addiction, internet addiction, and video game addiction (Aldao et al., 2010; Estevez et al., 2017; Sher & Grekin, 2007).

According to the cognitive-behavioral model presented by Meyer and colleagues, one of the important components in the maintenance of exercise addiction is emotion regulation (2011). Like emotional eating may have an emotion regulation function, it was argued that exercise behavior may have a similar function. They suggested that the role of emotion regulation in the maintenance of exercise behavior can be explained by positive and negative reinforcement. Exercise can provide positive feelings and a sense of well-being (i.e., positive reinforcement) and at the same time exercise can help avoid negative feelings and withdrawal effects arising from the absence of exercise behavior (i.e., negative reinforcement). The use of exercise behavior to avoid negative feelings in this manner may become habitual and may interrupt the flexible use of various emotion regulation strategies (Meyer et al., 2011).

In a 12-month longitudinal study, Goodwin and colleagues concluded that emotional regulation strategies predicted exercise addiction in adolescents (2014). In this study, the only significant predictor of exercise addiction was internal dysfunctional emotion regulation (i.e., the individual's attempt to deal with the situation on their own through dysfunctional ways such as rumination, repression, and

self-harm) for both boys and girls (Goodwin et al., 2014). These results offer support to the idea that emotion regulation is involved in the development and maintenance of exercise addiction.

Although there is research indicating that difficulties in emotion regulation led to both emotional eating behavior and exercise addiction, the majority of these studies are cross-sectional, and the cause-effect relationship has not been completely revealed in this context. As a result, an experimental study on the association between emotional eating and difficulties in emotion regulation in the context of exercise addiction is expected to be essential.

1.5. The Aim of the Present Study

Exercise addiction, which is later recognized as a behavioral addiction, is often comorbid with disordered eating behaviors. Studies indicate that emotional eating, which is a disordered eating behavior, is more common in individuals who experience negative emotions and have difficulties in regulating these emotions. This study aims to explore the emotional eating behavior in individuals who exercise excessively when they experience negative emotions and have difficulties in emotion regulation. In the present study, an experimental method will be designed to reveal the potential cause-and-effect relationship among the study variables. In the current study, emotional eating is measured with unhealthy food choice and sadness indicates negative mood. Overall, two hypotheses are generated:

Hypothesis 1. When unhealthy and healthy foods (i.e., chocolate cake vs. protein bar) will be presented, the participants in the happiness group will choose the healthy food represented by protein bar, whereas the participants in the sadness group will choose the unhealthy food represented by chocolate cake.

Hypothesis 2. Exercise addiction, emotion regulation difficulties, and mood condition will predict emotional eating.

2. METHOD

2.1. Participants

For the first part of the study, the sample consisted of 587 individuals. The exclusion criterion was being under the age of eighteen years old. 438 out of 587 individuals in the first part were determined to be eligible to continue the study and were invited to the second part. The inclusion criterion for the second part was being in the category of at-risk or nondependent-symptomatic based on EDS-21. EDS-21 enables to classify participants as (a) at-risk, (b) nondependent-symptomatic, or (c) nondependent-asymptomatic for exercise dependence (Hausenblas & Symons Downs, 2002b). 86 individuals out of the 483 people who were invited participated in the second part. One of them was excluded because they were underage.

2.1.1. Characteristics of participants in the second part of the study

The mean age of exercisers was 27.89 (SD = 7.451) and it ranged between 18 and 65. 30 (35.29%) of them were women, 53 (62.35%) of them were men and 2 (2.35%) of them were non-binary. Regarding their education level, 4.7% (n = 4) were graduates of high school, 20% (n = 17) were university students, 36.5% (n = 31) were graduates of university, 16% (n = 18.8) were postgraduate students, and 20% (n = 17) were postgraduates. The mean BMI of participants was 23.99 (SD = 3.466) and it ranged between 17.15 and 36.93. 10.6% of participants (n = 9) reported that they had taken psychiatric diagnoses while 89.4% (n = 76) had never taken any psychiatric diagnosis. Diagnoses they reported included depression (3 cases), borderline personality disorder (1 case), motor speech disorder (1 case), bipolar disorder (1 case), repetitive depressive disorder (1 case), and attention-deficit and hyperactivity

disorder (2 cases). 21.2% ($n = 18$) of exercisers reported that they follow a diet that influences their food choices while 78.8% ($n = 67$) do not follow a diet. Participants' dieting reasons included reasons related to health (11 cases), weight control (4 cases), and lifestyle (3 cases). More detailed demographic information can be seen in Table 1.

Table 1

Demographic Characteristics of the Participants

Variables	Frequency	Percent (%)
Gender		
Woman	30	35.29
Man	53	62.35
Non-binary	2	2.35
Education status		
Graduates of high school	4	4.7
University students	17	20
Graduates of university	31	36.5
Postgraduate students	16	18.8
Postgraduates	17	20
Diet status		
Yes	18	21.2
No	67	78.8
Psychiatric Diagnosis		
Yes	9	10.6
No	76	89.4
Using Medicine		
Yes	15	17.6
No	70	82.4

Table 1

Demographic Characteristics of the Participants (Continued)

Variables	Frequency	Percent (%)
SCOFF		
0-1	59	69.4
At least 2 or more	26	30.6
Age	$M = 27.89$	$SD = 7.451$
BMI	$M = 23.99$	$SD = 3.466$
Total	85	100

Note. BMI: Body Mass Index; SCOFF: The SCOFF Questionnaire

2.2. Materials

2.2.1. Demographic information form

In the first part of the study, detailed demographic information was not requested from participants; rather their e-mail addresses were asked to contact participants for the second part of the study. In the second part, the participants were asked to fill out a demographic form including 15 questions. The general questions of the demographic information forms consisted of age, gender, and education level. Also, participants were questioned about their height and weight to calculate their BMI. Regarding exercise behavior, which type of exercise participants prefer, how long they have been exercising regularly, amount of exercising hours per day in the last 6 months, and amount of exercise days per week were asked. In addition, participants answered the questions about whether they follow a diet that influences their food choices, their history of psychiatric/psychological diagnosis, and using any medicine (See Appendix E).

2.2.2. Difficulties in Emotion Regulation Scale

Difficulties in Emotion Regulation Scale (DERS) is a self-report scale which is developed by Gratz and Roemer (2004) to evaluate difficulties in emotion regulation among adults. The scale has 36 items including 6 subscales. The scale enables one to assess domains of emotion regulation on a 5- point Likert scale (1 = “almost never,” 5 = “almost always”). These domains include rejection of emotional responses (nonacceptance), difficulties in goal-directed behavior (goals), impulse control difficulties (impulse), lack of emotional awareness (awareness), limited access to emotion regulation strategies (strategies), and lack of emotional clarity (clarity). A score between 36 and 180 can be obtained on the scale, with higher scores indicating more difficulties in emotion regulation. Its Cronbach’s alpha value was .93 and its test-retest reliability was .88. The Turkish version of the DERS was adapted by Rugancı and Gençöz (2010). This version of the scale has a test-retest reliability of .83 and the internal consistency coefficient for the whole scale was .92. Also, the Cronbach’s alpha coefficients for the subscales were between .72 and .88. In the present study, Cronbach’s alpha was .90 (See Appendix H).

2.2.3. Exercise Dependence Scale-21

Exercise Dependence Scale-21 (Hausenblas & Symons Downs, 2002b) is a revised version of the initial Exercise Dependence Scale (Symons Downs, et al., 2004). The current scale is a 6-point Likert-type scale with 21 items, and it aims to assess exercise dependence symptoms. It is developed based on the DSM-IV (APA, 1994) criteria for substance dependence. The scale has seven subscales to measure different domains of exercise dependence. These are tolerance, withdrawal, continuance, lack of control, reductions in other activities, time, and intention. The

EDS-21 enables to classify participants as (a) at risk, (b) nondependent-symptomatic, or (c) nondependent-asymptomatic for exercise dependence (Hausenblas & Symons Downs, 2002b). According to the study, the scale came up with a good reliability. Cronbach's alphas of all the subscales ranged from .78 to .92, except alpha of the 'reduction in other activities' subscale ($\alpha = .67$) (Symons Downs et al., 2004). Yeltepe and İkizler studied the validity and reliability of the Turkish version of EDS-21 (2007). In reliability analysis, they found Cronbach's alpha as .96 for the first administration. For the second administration, it was .97 (Yeltepe & İkizler, 2007). In the present study, Cronbach's alpha was .91 (See Appendix F).

2.2.4. The SCOFF Questionnaire

The SCOFF questionnaire (SCOFF) is a simple scale that was created to help to determine a possible eating disorder (Morgan et al., 1999). It consists of five "yes" or "no" questions about eating habits and body image. Each positive answer counts as one point with two or more points indicating the likelihood of anorexia nervosa or bulimia (Morgan et al., 1999). The Turkish version of the SCOFF Questionnaire was adapted by Aydemir et al. (2015). They found that Cronbach's alpha coefficient for internal consistency was 0.74 (Aydemir et al., 2015). In the present study, Cronbach's alpha was founded as .59. In the present study, the scale was used to control whether participants had eating problems or not (See Appendix I).

2.2.5. Visual Analog Scale

The Visual Analog Scale (VAS) is firstly developed and used by Albersnagel (1988). The scale consists of 10 cm long lines that allow the participants to mark the intensity of their momentary emotions. Each line begins with a statement and ends

with the opposite of that statement (e.g., "I am not at all happy vs. "I am very much happy.") (Albersnagel, 1988). VAS is adapted for the Turkish sample by Aydın et al. (2011). They used factor analysis to assess the construct validity of the scale. The Cronbach's alpha coefficients of the three factors (i.e. "anxiety/distress", "positive affect", and "hostility") were found as .93, .84, and .73. Also, test-retest reliabilities of these factors were as follows: .46, .29, and .45 (Aydın et al., 2011). In this study, VAS was used to assess the degree of level participants experienced the given mood (i.e., sadness or happiness) (See Appendix G).

2.3. Procedure

Prior to data collection, ethical approval was taken from Yeditepe University Human and Social Sciences Ethics Committee (See Appendix A). The present study was designed as an online experimental study including two parts. In the first part, a call for the research was announced on social media (e.g., Instagram, Facebook, LinkedIn, etc.), and the participants were asked to fill out the EDS-21 via Google Forms. The participants were informed in a way that the main purpose of the study remained confidential, and they were told that they would be contacted by the researcher soon (See Appendix C).

All participants who took part in the first part received an e-mail response, and those who did not reach the cut-off point were informed that they were not required to participate in the study's second part, and they were thanked for their contributions. The participants who passed the cut-off point of the EDS-21 were invited to participate in the second part of the study which would be held on Zoom. For the second part of the study, the participants were asked to set an appointment day and

time on Doodle. The participants were informed that they are expected to be full and have a pen and paper with them while attending the Zoom meeting.

In the present study, there were two experimental groups (i.e., sadness and happiness) and a control group. Participants were assigned to experimental groups in the order in which they participated in the study. In other words, the first participant was assigned to the sadness group, the second one to the happiness group, and the third one to the control group, and this pattern was repeated for each following participant. After the informed consent (See Appendix D) and demographic form of the second part of the study, the participants were asked to rate their mood using VAS (i.e., pre-test condition). And then, the participants were subjected to mood induction (i.e., manipulation condition). At this stage, participants were asked to write a mood-inducing memory suitable for their group. In other words, participants in the happiness group were expected to write a happiness-inducing memory while the participants in the sadness group were asked to write a memory that evokes sadness. In the control group, participants wrote how they spent an ordinary day. Considering ethical issues, the participants in the sadness group were instructed to recall a memory rating of 7 out of 10 on a sadness scale. Those in the happiness group were expected to recall a memory that makes them deeply happy, while the sadness group recall a less intense memory. Therefore, the participants in the sadness group were asked to think of a scale. They were told that the memory should be as sad as corresponding 7 out of 10 on this scale. All groups were asked to give as much detail as possible when writing the memoir within 10 minutes. After finishing their writing, the participants were asked to talk about their memories in a few phrases with the researcher. Right after, the participants were asked to rate their mood by using the VAS once again (i.e., post-test condition). Following that, the participants were shown two food images

(i.e., a protein bar image and a chocolate cake image), and instructed to choose one of them (See Appendix J). In the present study, the protein bar image represents the healthy choice and the chocolate cake image represents the unhealthy choice which indicates emotional eating. Due to ethical requirements, the participants in the sadness group were shown a short video clip. This video was a two-minute cut from the most clicked funny cat video on Youtube, to ensure that they were in a positive mood at the end of the trial. Towards the end of the study, participants were requested to complete DERS to measure their level of difficulties in emotion regulation. SCOFF was presented to rule out any potential eating disorders. To be informed about their routine, the participants were then asked to reflect on their eating habits over the previous six months and indicate whether they were more likely to eat a protein bar or a chocolate cake. Finally, the main purpose of the study was explained to the participants before they leave the meeting (See Appendix K).

3. RESULT

3.1. Testing Normality

Prior to the main analyses, normality tests were conducted. According to Field (2005), the normality of variables is determined by histograms, boxplots, Skewness and Kurtosis, and the Shapiro-Wilk test. In the present study, normality values were summarized in Table 2 and Table 3, indicating non-normal distribution. Since the normal distribution could not be observed logarithmic transformation and square root transformation were applied to the data. Non-normal distribution was preserved after the transformation procedure, so the analyzes were conducted with non-parametric tests.

Table 2

Tests of Normality-1

Variables	Shapiro-Wilk			Skewness		Kurtosis	
	Statistic	df	Sig.	Statistic	Std. Error	Statistic	Std. Error
DERS	.991	85	.805	.081	.261	-.305	.517
EDS-21	.918	85	.000	1.121	.261	1.301	.517

Note: $N = 85$; DERS: Difficulties in Emotion Regulation Scale; EDS-21: Exercise Dependence Scale- 21

Table 3

Tests of Normality-2

Variables	Shapiro-Wilk			Skewness		Kurtosis	
	Statistic	df	Sig.	Statistic	Std. Error	Statistic	Std. Error
VAS (pre-test)	.949	58	.016	-.168	.314	6.60	.618
VAS (post- test)	.927	58	.002	-.601	.314	-.438	.618

Note. $N = 58$; VAS: Visual Analog Scale

3.2. Descriptive Statistics and Characteristics for Exercise Addiction

Since the present study has two stages in the recruitment process, the result section included valuable information about both the first ($n = 587$) and the second part ($n = 85$). As mentioned earlier, EDS-21 was implemented to assess the exercise addiction of volunteers, and then eligible individuals were invited to the second part. Accordingly, 9 % ($n = 53$) of the participants in the first part were classified as ‘at risk’ for exercise dependence, 65.6 % ($n = 385$) as ‘nondependent-symptomatic’, and 25.4 % ($n = 149$) as ‘nondependent-asymptomatic’. For the second part of the study, 11,76% ($n = 10$) of the participants classified as ‘at risk’ for exercise dependence, 88.24% ($n = 75$) were classified as ‘nondependent-symptomatic’. Descriptive scores for EDS-21 were seen in Table 2.

Table 4

Descriptives for EDS-21

Variable	1st part of the study				2nd part of the study			
	Mean	SD	Min	Max	Mean	SD	Min	Max
EDS-21	59.52	21.32	21	126	65.67	18.04	41	126

Note. EDS-21: Exercise Dependence Scale- 21

In the second part of the present study, the participants were asked to respond to some specific questions related to the characteristics of their exercise behaviors that were summarized in Table 3. It was shown that almost half of the participants have been exercising regularly for more than five years.

Table 5*Exercise-related characteristics of the participants*

Variables	Frequency	Percent (%)
Doing regular exercise since		
less than six months	5	5.9
six months- 1 year	9	10.6
1- 3 years	21	24.7
3-5 years	11	12.9
more than 5 years	39	45.9
Amount of exercising hours per day		
less than 1 hour	28	32.9
1- 3 hours	55	64.7
more than 3 hours	2	2.4
Amount of exercising day per week		
1	2	2.4
2	2	2.4
3	30	35.3
4	16	18.8
5	22	25.9
6	9	10.6
7	4	4.7
Kind of exercise		
Fitness/ Body Building	49	57.6
Pilates/Yoga	12	14.1
Running	9	10.6
Football	3	3.5
Basketball	4	4.7
Climbing	1	1.2
Bicycle	3	3.5
American Football	1	1.2
Handball	1	1.2
Trekking	2	2.4

Note. N = 85

3.3. Correlations and T-test Analyses for Exercise Addiction

The Spearman correlations between exercise addiction and other study variables (i.e., demographical information including age, BMI) and emotion regulation) were examined. The results showed that there was no significant relationship between exercise addiction and emotion regulation and demographical information except exercise amount. Participants' weekly exercise amount was positively correlated with total scores of EDS-21 ($r_s = .23, n = 85, p < .01$), “time” subscale ($r_s = .33, n = 85, p < .01$), and “lack of control” subscale ($r_s = .22, n = 85, p < .01$).

To test differences between females' and males' exercise addiction scores, Mann-Whitney test was conducted. The results revealed that there were no significant differences between genders in terms of total exercise addiction scores ($U = 626, z = -1.60, p = .109$). However, males significantly reported higher scores on “tolerance” subscale ($Md = 47.75, n = 53$) compared to females ($Md = 32.72, n = 30$), $U = 516.5, z = -2.65, p < .01$. In addition, males significantly reported higher scores on “lack of control” subscale ($Md = 48.7, n = 53$) compared to females ($Md = 30.17, n = 30$), $U = 440, z = -3.38, p < .01$.

3.4. Testing Mood Induction Process

Prior to the main analyses, the effectiveness of the mood induction procedure was tested via Wilcoxon signed-rank test. It was expected that after the mood induction process, the participants in the sadness group will report higher levels of sadness. Results confirmed the success of the manipulation method. In the sadness

group participants reported higher sadness levels after the mood induction ($Md = 5.59$, $n = 29$) compared to before ($Md = 4.14$, $n = 29$), $z = -3.26$, $p = .001$, with a large effect size, $r = .605$. *Hypothesis 1.b* also assumed that after the mood induction process, the participants in the happiness group will report higher levels of happiness. The hypothesis was accepted. In the happiness group, happiness levels were significantly higher after the mood induction ($Md = 7.62$, $n = 29$) compared to before ($Md = 6.97$, $n = 29$), $z = -3.09$, $p = .002$, with a large effect size, $r = .57$.

In addition, a one-way ANOVA was conducted to control the participants' levels of difficulties in emotion regulation for differences between mood conditions (i.e., sadness, happiness, and neutral). The results showed that there was no significant difference among the levels of difficulties in emotion regulation [$F(2, 82) = 0.70$, $p = 0.499$].

A McNemar's test is conducted to control the differences between the food choices of the participants in the experimental condition and their everyday choices. Results showed that there was no statistically significant difference between participants' food choices after mood condition and their choices based on their general preferences. Participants' food choices in the experiment did not significantly differ from their general preferences ($p = 0.57$).

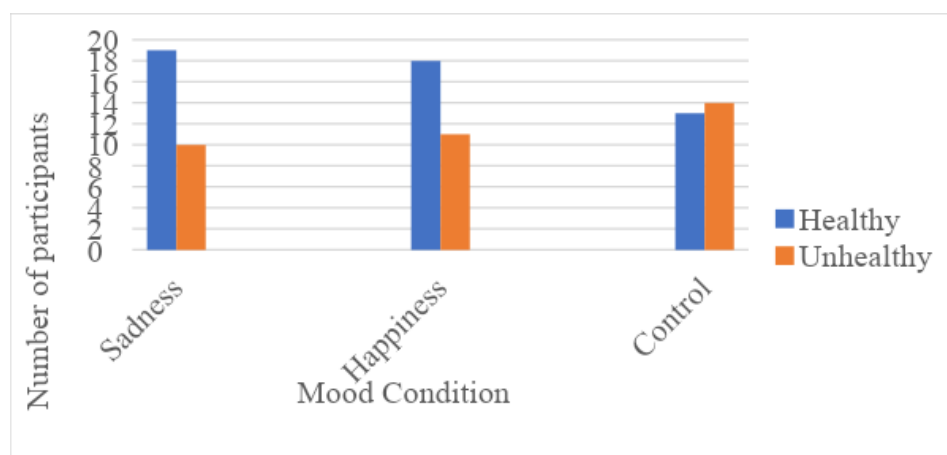
3.5. Main Hypothesis Testing

Hypothesis 1 assumed that when unhealthy and healthy foods (i.e., chocolate cake vs. protein bar) will be presented, the participants in the happiness group will choose the healthy food represented by the protein bar, whereas the participants in the sadness group will choose the unhealthy food represented by chocolate cake. The hypothesis was rejected. A chi-square test was conducted to examine the relationship

between the mood condition and the food choice. It was found that there was no significant relationship between these two variables, $\chi^2(2, N = 85) = 1.166, p = .558$. Participants' food choices were not affected by their mood conditions as can be seen in Figure 1.

Figure 1

Participants' food choices based on their mood conditions



Hypothesis 2 assumed that exercise addiction, emotion regulation difficulties, and mood conditions will predict emotional eating. To test the association between predictor variables (i.e., mood condition, difficulties in emotion regulation, and exercise addiction) and dependent variable (i.e., emotional eating), a binary logistic regression analysis was conducted. Before regression analysis, the assumptions were examined. In terms of multicollinearity, tolerance values (above 0.1) and VIF values (below 2.00) were all within acceptable limits for all variables. Tolerance values and VIF values can be seen in Table 6. In addition, outliers were checked, and 5 cases were removed from the data. The hypothesis was rejected. Results of regression analysis revealed that mood condition, difficulties in emotion regulation, and exercise

addiction did not significantly predict emotional eating, $X^2(4, N = 80) = 4.958, p = .292$. Another regression analysis was conducted in which BMI was also included in the predictive variables. Again, results showed that predictive variables did not significantly predict emotional eating, $X^2(5, N = 80) = 4.978, p = .419$.

Table 6

Multicollinearity test statistics

Model	Collinearity Statistics	
	Tolerance	VIF
Constant		
Mood	.986	1.014
DERS	.970	1.031
EDS-21	.959	1.042

Note. $N = 80$; Mood: Mood Induction Condition; DERS: Difficulties in Emotion Regulation Scale; EDS-21: Exercise Dependence Scale-21; VIF: Variance Inflation Factor

4. DISCUSSION

4.1. Findings of the Study

This study investigates the emotional eating behaviors of people with exercise addiction when they experience negative feelings and have emotion regulation difficulties. An experimental method was used to determine whether there is a cause-effect relationship between emotional eating and negative mood in exercise-addicted persons with emotion dysregulation. It was hypothesized that exercise addiction, difficulties in emotion regulation, and negative mood (i.e., sadness) will predict emotional eating.

Initially, the exercise-related characteristics of the participants were investigated to gain a better understanding of exercise addiction and to interpret the findings in the light of the literature. Considering the prevalence of exercise addiction, it appears to affect 3%- 14% of the exercising population (Trott et al., 2020). In the first part of the current study, 9% of the participants were classified as ‘at risk’ of exercise dependence. This finding was consistent with the related literature. However, it is important to note that EDS-21 (Hausenblas & Symons Downs, 2002b) classifies exercise addiction under three categories (i.e., ‘at risk’ of exercise dependence, ‘nondependent-symptomatic’, or ‘nondependent-asymptomatic’). Participants who were classified as ‘nondependent-asymptomatic’ were not invited to the second part of the study. In the first part, 65.6% of the participants were classified as ‘nondependent-symptomatic and 25.4% as ‘nondependent-asymptomatic’. In the second part when ‘nondependent-asymptomatic’ participants are excluded, 11.76% of the participants were classified as ‘at risk’ of exercise dependence and 88.24% as

‘nondependent-symptomatic’. This finding is also consistent with the literature. According to the study by Hausenblas and Symons Downs (2002b), 62.5 % of the participants were classified as ‘nondependent-symptomatic and 30.6% as ‘non-dependent–asymptomatic’. The high percentage of exercisers who exhibit symptoms despite not being considered at risk of exercise addiction might indicate that different tools and detailed clinical evaluations are required when there is a high level of engagement in exercise behavior (Szabo et al., 2015).

Previous studies demonstrate that men tend to show higher levels of exercise addiction compared to women (Hausenblas & Symons Downs, 2002c; Costa et al., 2013). However, most of the studies on exercise addiction are completed with university samples including recreational exercises and some of the studies found fewer gender differences in professional athletes (Dimutru et al., 2018). Therefore, gender differences regarding exercise addiction are still controversial. In the present study, the findings showed that there was no gender difference in terms of exercise addiction levels based on the total scores on EDS-21. It should be noted, however, that men scored higher than women on 2 of the 7 EDS-21 subscales which were lack of control and tolerance. This finding might demonstrate that although men and women have similar levels of exercise addiction, men are likely to need to spend more time on their exercise behaviors and have difficulties in limiting those behaviors. These discrepancies might be explained by the fact that females and males have different motives for exercising. Men might exercise for muscularity, whereas women typically exercise to lose and maintain weight due to societal standards (Costa et al., 2013). In a study with the participants who show exercise addiction symptoms, Hausenblas and Fallon found that female participants’ BMI scores positively correlated with their levels of body dissatisfaction and social physique anxiety (2002).

Besides, the results showed that males with higher involvement in exercising reported lower body dissatisfaction and lower social physique anxiety. Hausenblas and Fallon suggested that these results support the idea that males and females exercise for different purposes (2002).

Exercise addiction is often comorbid with eating disorders, making it difficult to determine which is the "primary" disorder. To be able to discuss primary exercise addiction, it must be a distressing major issue in the person's life and not have developed as a result of any eating disorder (Berzick et al., 2012). In the present study, SCOFF (Morgan et al., 1999) and BMI scores were used to elaborate on the risk of having an eating disorder. The normal range for BMI is accepted as between 18.5 and 24.9. Also, SCOFF indicates eating disorder risk for scores of 2 and above. Based on their reporting on SCOFF, 69.4% of the participants were not at risk of any eating disorder. On the other hand, participants' average BMI scores were relatively high when considering the normal range (i.e., $18.5 \leq \text{BMI} \leq 24.9$). Only 3 of the 85 participants had a BMI below 18.5 and 28 of them had a BMI above 24.9. Therefore, the participants in the present study may be considered to not have anorexia nervosa. Accordingly, it can be said that the majority of our participants had primary exercise addiction characteristics. Nonetheless, the scanning tools used in the present study were not capable enough to assess a wide range of eating disorders such as bulimia nervosa; therefore, further studies should consider a more detailed examination of the comorbidity of exercise addiction and eating disorders.

In the literature, results consistently showed that the duration of involvement in exercising is positively correlated with exercise addiction symptoms (Adams, 2009; Costa et al., 2013; Kotbagi et al., 2017). Similarly, it was found that there was a significant positive relationship between exercise addiction and the amount of

exercise in the present study. More specifically, the findings revealed that participants' weekly exercise amounts positively correlated with total scores on EDS-21, "time" subscale, and "lack of control" subscale. People who spend a lot of time exercising find it difficult to reduce exercising (Hausenblas & Symons Downs, 2002a). Although exercise addiction is frequently characterized by repetitive exercise behavior, it cannot be explained solely by the amount of exercise, and it is conceptually similar to other behavioral addictions (Adams, 2009). On the other hand, the conceptual characteristics of exercise addiction are inherently demanding continued physical activity (Hausenblas & Symons Downs, 2002a). People who are addicted to exercise increase the amount of exercising because they develop tolerance, continue to exercise despite injuries, or exercise by reducing the time they have available for other activities (Adams, 2009; Hausenblas & Symons Downs, 2002a). Therefore, a cause-and-effect relationship may not be established, as if doing more exercise leads to exercise addiction, but a reciprocal relationship can be mentioned. It can be said that understanding the mechanisms underlying the continuation of exercise behavior is critical here (Kotbagi et al., 2017). Hamer and Karageorghis suggested that negative mood states, in combination with the amount of exercise, may contribute to increased exercise addiction (2007). People use exercise to feel better or reduce negative feelings and by the time skipping exercising causes negative feelings that could be reduced by exercising again. In that way, negative feelings may contribute to both the development and maintenance of exercise addiction (Hamer & Karageorghis, 2007; Berzick, 2012).

In the present study, it was hypothesized that after mood induction process, the participants in the sadness group will report higher levels of sadness while the participants in the happiness group will report higher levels of happiness. Since mood

induction is a commonly used technique in experimental studies, many different methods have been developed to elicit or increase certain moods in participants. These methods include film clips (Samson et al., 2015), interaction with human confederates (Kučera & Haviger, 2012), reading self-referent statements (Velten, 1968), and listening to music (Västfjäll, 2002). One of the most widely used methods, autobiographical recall, was applied in the present study (Jallais, & Gilet, 2010). As hypothesized, the mood induction was found as effective in terms of inducing both sadness and happiness to measure participants' emotional eating behaviors in the present study. In other words, writing an autobiographical memory about the given mood and then sharing a few sentences about it with the researcher could change the participants' mood. Participants in the sadness group reported that they were sadder after writing the memoir than they were before. The happiness intensity of the participants in the happiness group changed in the same direction, too. It was hypothesized that the participants exposed to sadness mood induction would choose unhealthy food, indicating emotional eating. However, contrary to this hypothesis, the results showed that participants' food choices were not influenced by their moods. In general, participants preferred healthy food (i.e., protein bar). Healthy food was chosen more frequently by both the sad and happy groups, while unhealthy food (i.e., chocolate cake) was chosen more frequently by the control group. To control the difference between daily life choices and choices in the experimental condition, the participants were asked which type of food (i.e., protein bar or chocolate cake) would they prefer in the previous six months. The results revealed that the majority of participants preferred the food they chose to eat in their daily lives. Also, to eliminate the possible effect of differences in emotion regulation difficulties on food choices in the present study, a one-way ANOVA was run to test differences in the levels of

emotion regulation difficulties among sadness, happiness, and neutral groups and it was found that the levels of emotion regulation difficulties in three groups did not differ. Our results imply that the participants' food choices were not affected by their moods. However, further studies may assign participants based on their levels of emotion regulation difficulties so that they could measure the influence of variations among different levels of emotion regulation difficulties. To comprehend these findings, discussing some details regarding the study's methodology may be required. Experimental studies on emotional eating enable control over potentially confounding situational factors such as hunger level, food availability, etc. However, it is critical to choose the food offered carefully in terms of variety and taste (Reichenberger et al., 2020). In the present study, participants were offered two choices of food. The food served may not have matched their individual preferences. To avoid this, instead of offering one healthy and one unhealthy food, participants might have been served two groups of healthy and unhealthy foods. Also, it is important to note that the participants made a choice by looking at the food pictures instead of eating the food presented to them because the study was completed on online platforms. In this case, the choice they made may not have reflected their actual choices. Besides, knowing that their choices will be observed may have altered their preferences due to their heightened self-awareness (Reichenberger et al., 2020).

Participants' food choices were not predicted by their mood, their levels of difficulties in emotion regulation, and their levels of exercise addiction. Meyer and colleagues (2011) developed a cognitive model regarding how exercise addiction is maintained in the context of eating disorders, and they suggested four predictors of exercise addiction (i.e., eating disorder symptomology, emotion regulation, obsessive-compulsiveness, and perfectionism). According to this model, they

emphasized the importance of understanding the reciprocal relationship between eating disorders and exercise addiction rather than viewing exercise addiction as a symptom of eating disorders. It is suggested that the compulsive nature of exercise addiction could be explained through an effort to avoid the negative influences of not exercising (Meyer et al., 2011). According to this, exercisers might become concerned about withdrawal symptoms and, in particular, negative emotions (e.g., anxiety) that they will experience if they are unable to exercise, so they may continue to exercise to avoid these negative consequences (Meyer et al., 2011). The same mechanism could be observed in emotional eating. Turton et al. proposed compulsivity can explain the role of emotional eating in the development of binge eating and obesity (2017). According to this, while eating attacks begin as impulsive and rewarding, they gradually become triggered by negative emotions. As a result, eating will no longer be rewarding instead of that it will be used to avoid negative emotions (Turton et al., 2017). On the other hand, Meyer and colleagues proposed that perfectionism (i.e., having high expectations of oneself and striving for flawlessness) is also related to both exercise addiction and eating disorders (2011). In both eating disordered and non-eating disordered populations, exercise addiction has been demonstrated to be associated with higher levels of perfectionism. According to previous studies, both the self-criticism and high personal standards dimensions of perfectionism appear to contribute to the maintenance of exercise addiction. (Meyer et al., 2011). Also, it is suggested that there are core mechanisms that contribute to the maintenance of bulimia nervosa, anorexia nervosa, and atypical disorders and perfectionism is of these core mechanisms (Fairburn et al., 2003). To our knowledge, studies are scarce on the relationship between perfectionism and specifically emotional eating. However, Wang and Li revealed that higher negative perfectionism levels are related

to emotional eating and this relationship is mediated by stress levels (2017). Also, in a different study, a relationship between perfectionism and food addiction has been discovered, which may be related to emotional eating (Hauck et al., 2019). Food addiction is characterized by a tendency to consume highly processed and high-calorie foods, and it shares characteristics with substance addictions. Hauck and colleagues discovered a mediator effect of exercise addiction on the relationship between perfectionism and food addiction (2019). According to the studies mentioned above, both exercise addiction and emotional eating can be linked to compulsivity and perfectionism. In the present study, participants' levels of compulsivity and/or perfectionism may have differed significantly. Therefore, participants' levels of sadness, exercise addiction, and emotion regulation difficulties may be insufficient to predict emotional eating. Besides, emotion regulation difficulties appear to contribute to both emotional eating (Macht & Simons, 2000; Spoor et al., 2007) and exercise addiction (Meyer et al., 2011). However, although difficulties in emotion regulation are seen in a variety of disorders and are thought to be a transdiagnostic process, there is still limited and mixed evidence about how it contributes to the development and maintenance of psychological disorders (Cludius et al., 2020). Longitudinal research may be required to determine whether emotion regulation plays a role in the development of exercise addiction and emotional eating. In addition, testing the mechanism of emotion regulation (e.g., as a mediator) in regards to mood and emotional eating may contribute to a rich understanding of the complicated relationship between emotion regulation, exercise addiction, and emotional eating.

Most psychology studies are conducted with Western samples, however, the present study's sample consisted of Turkish participants. Therefore, the results might have been influenced by some cultural differences. People may need to learn to

associate emotions with eating to engage in emotional eating. In other words, instead of being a direct result of an emotion, emotional eating may be the result of associations formed between emotions and food (Alzheimer & Urry, 2019). This learning process might be influenced by one's cultural background. Luomala et al. contend that emotional eating behavior can vary according to the types of food chosen (i.e., everyday vs. luxurious) and the consumption situation (i.e., solitary vs. social) (2009). Following that four distinct emotional eating patterns can be identified which are solitary-everyday, social-everyday, solitary-luxurious, and social-luxurious. In other words, in response to emotions, one can eat low-priced, ordinary foods or choose high-quality, rare foods. Also, one may eat alone or in the company of others (Luomala et al., 2009). In their study, they found that people from different cultural backgrounds (i.e., Finnish, French, and Pakistani cultures) prefer different emotional eating patterns. Luomala et al. suggested that people attach meanings to foods and eating styles that are related to emotional eating, and these associations are influenced by cultural background as well as personal experiences (2009). Also, previous studies suggest that there are some cultural differences regarding emotion regulation (Butler et al., 2007; Matsumoto et al., 2008; Ramzan & Amjad, 2017). Since emotions serve a variety of social purposes, people's emotion regulation strategies may be influenced by the values of the society in which they live (Matsumoto et al., 2008). According to Ramzan and Amjad, while individualistic cultures reinforce emotional expression, especially for positive emotions, collectivistic cultures prefer emotional suppression for both negative and positive emotions to pursue social cohesion (2017). Future research may investigate how Turkish cultural values influence emotional eating behavior and emotion regulation skills.

Also, it can be suggested that only specific discrete emotions may cause emotional eating (Alzheimer & Urry, 2019). Various studies show that feelings other than sadness, such as anxiety, boredom, and stress, could also induce emotional eating (Alzheimer & Urry, 2019; Schneider et al., 2012). Given that any emotion does not directly lead to emotional eating without the formation of a relationship between a specific emotion and eating, people may engage in emotional eating behavior in response to various emotions (Alzheimer & Urry, 2019). In the present study exercisers, even if they have difficulty in regulating their emotions, may not have learned an association between sadness and eating. Therefore, they may not engage in emotional eating in response to sadness.

4.2. Limitations of the Study and Recommendations for Future Research

The present study has both strengths and limitations that could be addressed in future research. Since most exercise addiction studies are conducted with university students, there is an ongoing discussion about the generalizability of the results (Costa et al., 2013). In the present study, participants' ages ranged between 18 and 65 and only 20% of the participants were university students. Despite the wide age range and different educational levels of the participants, the prevalence of exercise addiction, correlations between exercise addiction and amount of exercise, and some gender differences were consistent with the literature. These findings may contribute to the literature on the demographics of exercise addiction.

In the present study, an experimental method was used to measure emotional eating because there is a remarkable controversy on the validity of emotional eating scales based on self-reporting. Literature related to emotional eating shows that emotional eating questionnaires often lack validity. In other words, self-reported

emotional eating does not reflect actual food intake in response to negative emotions (Reichenberger et al., 2020; Bongers & Jansen, 2016; Evers et al., 2009). One possible explanation for this handicap could be that due to social desirability or recall bias, participants may underreport their food intake (Evers et. al., 2009; Stice et al., 2004). Furthermore, for these scales to accurately measure emotional eating behavior, the participant must correctly recall both the negative emotional state and the respecting eating behavior and be able to establish the relationship between these two situations, which is extremely difficult. Recent studies prefer experimental or naturalistic designs to avoid being influenced by this validity issue (Reichenberger et al, 2020). For these reasons, one of the main strengths of the present study was that an experimental method was used to assess emotional eating. However, the present study was conducted in an online platform, rather than in a controlled lab environment due to the restrictions as a result of the worldwide Covid-19 pandemic. Although it has been demonstrated in research findings that web-based studies often replicate classical methods, even in studies involving manipulation, this less precisely controlled method may produce unreliable results (Birnaum, 2004). Due to mentioned circumstances, our participants took part in the study when they were at their homes, workplaces, or outside. Therefore, the participants were not able to touch and sense food presented in the study to eat in person. Consequently, an instant effect of a certain food might not occur. It would be beneficial for the validity of the results for emotional eating studies to be conducted in settings where participants' food intake could be directly observed. At least, it might be suggested to conduct a pilot study in a lab setting for web-based experiments (Birnaum, 2004). Moreover, the food preferences presented to the participants may have influenced the results. As previously stated, a variety of food choices may be important in emotional eating studies so that presented foods match

the tastes of the participants (Reichenberger et. al., 2020). As a precaution, participants could be given two food groups rather than one healthy and one unhealthy option. In addition, emotional eating might be influenced by the social context and perceived societal standards (Alzheimer & Urry, 2019). In the present study, the protein bar, which is offered as healthy food, might be socially associated with exercising. Regarding that, participants may have thought they were expected to choose the protein bar. The fact that they did not eat the food presented may have also made it easier for them to make a socially desirable choice. A scale measuring social desirability could be used at this point to assess the impact of social desirability on participants' choices. Also, a protein bar may be preferred by exercisers for emotional eating because it is perceived as a healthy food option. Future studies may explore which food choices measure emotional eating while working with exercisers or conduct a pilot study to optimize food choices before such an experimental study. Additionally, to discover effective methods for measuring emotional eating, future research could combine experimental methods with naturalistic studies in which participants are asked to report their daily moods and/or mood shifts, as well as their food intake, and these records are then controlled for any pattern reflecting emotional eating (Bongers & Jansen, 2016).

Another limitation of the present study is that the pre-assessment and post-assessment procedures for mood checks were only applied to two experimental groups (i.e., sadness and happiness) but not to the control group. It means that this group was neither given a pre-test nor a post-test despite being asked to write down an ordinary day of theirs. Since autobiographical recall is a well-established method that is frequently used and found successful in inducing desired moods (Jallais, & Gilet, 2010), the neutral mood was assumed as a predetermined condition for the control

group. In the present study, statistical analyses showed that the mood induction procedure worked for both the sadness and happiness groups with a large effect size; however, further studies should include the mood check for the control group to increase internal validity.

Besides, the sample size was limited in the present study. Even though 578 participants contributed to the first part of this study, only 85 of the eligible participants accepted to participate in the experimental part. Especially for predictive analyses, there is a general agreement on the importance of having an adequately large sample (Bujang et al., 2018); however, our data might be considered relatively small for binary logistic regression analysis. Hence, larger sample sizes are recommended for further studies to increase generalizability.

4.3. Clinical Implications of the Present Study

Exercise behavior is regarded as a beneficial habit and it is not a disorder with established diagnostic criteria, so even clinicians can overlook the detrimental effects of exercising (Hausenblas et al., 2017). Soever exercise addiction is frequently studied with eating disorders and disordered eating behaviors, its complicated relationship with disordered eating has not been clarified yet (Meyer et al., 2011). There is currently neither any explanation in the literature for exercisers' emotional eating behavior. Emotional eating is not recognized as an eating disorder, but it is a disordered eating behavior seen in both people with and without eating disorders and suggested as a risk factor for eating disorders (Bourdier et al., 2018; İnalkaç & Arslantaş, 2018; Ricca et al., 2009). Also, higher levels of emotional eating are related to poorer psychological well-being (Braden et al., 2018). Understanding these two easily overlooked phenomena, as well as their complicated relationships with one

another, is critical for improving treatment and prevention techniques. Interventions for both exercise addiction and disordered eating require a solid theoretical foundation, as reducing these behaviors or altering cognitions about them without addressing the underlying causes may have negative consequences (Meyer et al., 2011).

Although the present study did not confirm the relationship, the literature consistently states that emotional regulation difficulties appear to be associated with both emotional eating (Spoor et al., 2007) and exercise addiction (Meyer et al., 2011). Emotion regulation is later recognized as a transdiagnostic process. Using transdiagnostic processes rather than disorder-specific methods may be more effective in reducing clinical symptomology, especially when multiple disorders are present together (Cludius et al., 2020). Training for adaptive emotion regulation strategies would be beneficial in preventing negative results of emotion regulation difficulties. Treating people's difficulties with emotion regulation could play an important role in interventions for both exercise addiction and emotional eating. For instance, Dialectical Behavioral Therapy (DBT) is usually adapted for improving emotion regulation skills through training on adaptive emotion regulation strategies (Fassbinder et al., 2016). Also, DBT appears to be effective in the treatment of eating disorders and disordered behaviors (Bankof et al., 2012), therefore, it may be useful to develop methods for comorbid exercise addiction.

Additionally, for exercise addiction, the goal of the interventions is not to prevent individuals from exercising because this can lead to adverse consequences, such as getting more involved in exercising (Hausenblas et al., 2017). Rather, interventions should aim to help exercisers to recognize addictive behavior and mitigate exercise routine rigidity. Cognitive-behavioral therapy is also suggested for

restructuring maladaptive beliefs about exercise (Hausenblas et al., 2017). Costa et al. discovered that symptoms of exercise addiction diminish with age (2013). They hypothesized that this could be explained by declining physical activity with age or by older people being better at regulating their emotions (2013). Either way, reaching young people is important to prevent exercise addiction. Courses such as sports psychology can be taught in relevant university faculties for the prevention of exercise addiction. Furthermore, it would be beneficial to organize seminars to educate exercisers on the negative effects of exercising (Yıldız et al., 2017). Also, according to Samuel and Cohen, emotional eating is more common in young adults than in middle-aged and elderly people (2018). They also discovered that expression suppression (i.e., a specific emotion regulation strategy) was related to emotional eating and this relationship was moderated with age. Accordingly, the association between expression suppression and emotional eating was stronger for young adults. They suggested that targeting emotion regulation patterns could be critical for disordered eating behaviors, particularly in young people (Samuel & Cohen, 2018). Fairburn and colleagues developed a transdiagnostic treatment for a wide range of eating disorders because they suggested that there are four core mechanisms (i.e., clinical perfectionism, core low self-esteem, mood intolerance, and interpersonal difficulties) that are involved in the maintenance of eating disorders (2003). Accordingly, rather than diagnosing the patient with a specific eating disorder and treating it, treatment can provide more long-term results by addressing these contributing factors (Fairburn et al., 2003). When emotional eating is comorbid with eating disorders, this approach can be helpful in understanding and intervening.

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Appendix A: Ethical Committee Approval



05.10.2021

Sayı : E.50532705-302.14.01-986
Konu : Begüm Malkoç Kurul Onayı

İLGİLİ MAKAMA

Üniversitemiz Sosyal Bilimler Enstitüsü Klinik Psikoloji Yüksek Lisans öğrencisi Begüm Malkoç'un, Dr. Öğr. Üyesi Merve Denizci Nazlıgül danışmanlığında yürütülecek olan "The Effects of Sadness and Difficulties in Emotion Regulation on Emotional Eating in Individuals with Exercise Addiction: An Experimental Study / Üzüntü ve Duygu Düzenlemedeki Zorlukların Egzersiz Bağımlılığı olan Kişilerde Duygusal Yeme Davranışına Etkisi: Deneysel Bir Çalışma" başlıklı araştırmasının beşeri bilimler etik standartlarına uygunluğuna ilişkin Yeditepe Üniversitesi Beşeri ve Sosyal Araştırmalar Etik Kurul Onayı ekte sunulmuştur.

Gerekli iznin verilmesi hususunu bilgilerinize arz ve rica ederim.

İmza
Prof. Dr. Fatma Yeşim EKİNCİ
Rektör a.
Rektör Yardımcısı

Ek: Etik Kurul Onayı.pdf

Bu belge, güvenli elektronik imza ile imzalanmıştır.
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Appendix B: List of Abbreviations

APA -- American Psychiatric Association

DSM -- Diagnostic Manual of Mental Disorders

BMI – Body Mass Index

VIF -- Variance Inflation Factor

Appendix C: Informed Consent Form- 1

Sayın Katılımcı;

Bu çalışma Yeditepe Üniversitesi Psikoloji Bölümü'nde görev yapmakta olan Dr. Öğr. Üyesi Merve Denizci Nazlıgöl danışmanlığında, Yeditepe Üniversitesi Klinik Psikoloji Yüksek Lisans Programı öğrencisi Begüm Malkoç tarafından yürütülmektedir. Çalışmanın amacı egzersiz davranışı ile alışveriş davranışı arasındaki ilişkiyi araştırmaktır.

Çalışma iki aşamadan oluşmakta, çalışmanın ikinci aşamasına katılımınız için aşağıda vereceğiniz e-mail adresi üzerinden sizinle daha sonra iletişime geçilecektir. Bu ilk aşamanın yaklaşık 5 dk. sürmesi beklenmektedir.

Bu çalışma kapsamında vereceğiniz tüm bilgiler tamamen gizli kalacaktır. Çalışmaya katılımınızın anonim olmasını sağlamak amacıyla sizden isim-soyisim gibi bilgiler istenmemektedir. Çalışmanın objektif olması ve elde edilecek sonuçların güvenilirliği bakımından tüm soruları duygu ve düşüncelerinizi yansıtacak şekilde içtenlikle yanıtlamanız önemlidir. Çalışmaya katılım tamamıyla gönüllülük esasına dayanmaktadır. Katılım sırasında herhangi bir nedenden ötürü kendinizi rahatsız hissederseniz çalışmayı istediğiniz anda bırakmakta serbestsiniz. Ancak yanıtlarınız tüm sorulara cevap vermeniz halinde değerlendirmeye alınacaktır. Bu sebeple, soruların tamamını doldurmanız araştırma için büyük önem taşımaktadır. Verdiğiniz bilgiler sadece araştırmacılar tarafından değerlendirilecektir ve elde edilecek bilgiler bilimsel yayınlarda kullanılacaktır. Katılımınız için şimdiden teşekkürler.

Çalışma hakkında daha fazla bilgi almak için Yeditepe Üniversitesi Klinik Psikoloji Yüksek Lisans Programı öğrencisi BEGÜM MALKOÇ ile iletişime geçebilirsiniz.

Bu çalışmaya tamamen gönüllü olarak katılıyorum ve istediğim zaman yarıda kesip çıkabileceğimi biliyorum. Verdiğim bilgilerin bilimsel amaçlı yayınlarda kullanılmasını kabul ediyorum.

- Evet.

Lütfen araştırmanın ikinci aşaması için sizinle iletişime geçebileceğim bir e-mail adresi yazınız:

E-mail adresi:

Appendix D: Informed Consent Form-2

Sayın Katılımcı;

Bu çalışma Yeditepe Üniversitesi Psikoloji Bölümü'nde görev yapmakta olan Dr. Öğr. Üyesi Merve Denizci Nazlıgül danışmanlığında, Yeditepe Üniversitesi Klinik Psikoloji Yüksek Lisans Programı öğrencisi Begüm Malkoç tarafından yürütülmektedir. Çalışmanın amacı egzersiz davranışı ile alışveriş davranışı arasındaki ilişkiyi araştırmaktır.

Araştırmacı ve katılımcının çevrimiçi olarak yüz yüze geldiği bu aşamanın yaklaşık 25 dakika sürmesi ve katılımcılardan yazı yazmayı içeren bazı görevleri tamamlamaları beklenmektedir.

Bu çalışma kapsamında vereceğiniz tüm bilgiler tamamen gizli kalacaktır. Çalışmaya katılıminızın anonim olmasını sağlamak amacıyla sizden isim-soyisim gibi bilgiler istenmemektedir. Çalışmanın objektif olması ve elde edilecek sonuçların güvenilirliği bakımından tüm soruları duygu ve düşüncelerinizi yansıtacak şekilde içtenlikle yanıtlamanız önemlidir. Çalışmaya katılım tamamıyla gönüllülük esasına dayanmaktadır. Katılım sırasında herhangi bir nedenden ötürü kendinizi rahatsız hissederseniz çalışmayı istediğiniz anda bırakmakta serbestsiniz. Ancak yanıtlarınız tüm sorulara cevap vermeniz halinde değerlendirmeye alınacaktır. Bu sebeple, soruların tamamını doldurmanız araştırma için büyük önem taşımaktadır. Verdiğiniz bilgiler sadece araştırmacılar tarafından değerlendirilecektir ve elde edilecek bilgiler bilimsel yayınlarda kullanılacaktır. Katılıminız için şimdiden teşekkürler.

Çalışma hakkında daha fazla bilgi almak için Yeditepe Üniversitesi Klinik Psikoloji Yüksek Lisans Programı öğrencisi BEGÜM MALKOÇ ile iletişime geçebilirsiniz.

Bu çalışmaya tamamen gönüllü olarak katılıyorum ve istediğim zaman yarıda kesip çıkabileceğimi biliyorum. Verdiğim bilgilerin bilimsel amaçlı yayınlarda kullanılmasını kabul ediyorum.

Appendix E: Demographic Information Form

- Yaşınız:
- Cinsiyetiniz:
- Eğitiminiz:
 - o Okur yazarım
 - o Lise mezunuyum
 - o Üniversite öğrencisiyim
 - o Üniversite mezunuyum
 - o Lisansüstü mezunuyum
- Boyunuz:
- Kilonuz:
- Lütfen yapmayı en sık tercih ettiğiniz egzersiz türünü/türlerini yazınız: ...
- Lütfen ne kadar süredir egzersiz yaptığınızı belirtiniz:
 - o 6 aydan az
 - o 6 ay- 1 yıl arası
 - o 1- 3 yıl arası
 - o 3- 5 yıl arası
 - o 5 yıldan fazla
- Lütfen haftada kaç gün egzersiz yaptığınızı belirtiniz:
- Lütfen son 6 ayı göz önünde bulundurarak, günde ortalama kaç saat egzersiz yaptığınızı belirtiniz.
 - o 1 saatten az
 - o 1-3 saat
 - o 3 saatten fazla

- Beslenmenizi etkileyecek özel bir durumunuz var mı? (Örneğin diyabet, çeşitli alerjiler, sağlık/kilo verme/egzersiz gibi herhangi bir sebepten uygulanan diyetler...):
 - ☐ Evet
 - ☐ Hayır
- Cevabınız evetse lütfen ne olduğunu belirtiniz:
- Herhangi bir psikiyatrik rahatsızlığınız var mı?
 - ☐ Evet
 - ☐ Hayır
- Cevabınız evetse lütfen ne olduğunu belirtiniz:
- Düzenli olarak kullandığınız bir ilaç var mı?
 - ☐ Evet
 - ☐ Hayır
- Cevabınız evetse lütfen ne olduğunu belirtiniz:

Appendix F: Exercise Dependence Scale- 21

Aşağıdaki ölçeği kullanırken, lütfen soruları mümkün olduğunca dürüst olarak cevaplayınız. Sorular, şu andaki egzersiz inançlarınız ve son 3 ay içinde davranışlarınız ile ilişkilidir. Lütfen cevaplarınızı her bir ifadenin yanındaki boşluğa yazınız.

	Asla	Nadiren	Bazen	Genellikle	Sık sık	Daima
1. Huzursuzluktan sakınmak için egzersiz yaparım.	1	2	3	4	5	6
2. Tekrarlayan fiziksel problemlere rağmen egzersiz yaparım.	1	2	3	4	5	6
3. İstediğim etkiye/yararlara ulaşmak için sürekli olarak egzersiz şiddetimi artırırım.	1	2	3	4	5	6
4. Egzersiz yapma süremi azaltamıyorum.	1	2	3	4	5	6
5. Aile ya da arkadaşlarımla zaman geçirmek yerine egzersiz yaparım.	1	2	3	4	5	6
6. Egzersiz yapmak için çok fazla zaman harcarım.	1	2	3	4	5	6
7. Yapmayı düşündüğümde çok daha uzun süre egzersiz yaparım.	1	2	3	4	5	6
8. Endişeli hissetmekten sakınmak için egzersiz yaparım.	1	2	3	4	5	6
9. Yaralandığımda bile egzersiz yaparım.	1	2	3	4	5	6
10. İstediğim etkiye/yararlara ulaşmak için sürekli olarak egzersiz sıklığımı artırırım.	1	2	3	4	5	6
11. Egzersiz yapma sıklığımı azaltamıyorum.	1	2	3	4	5	6
12. Okul ya da işime konsantre olmam gerektiğinde bile egzersiz yapmayı düşünürüm.	1	2	3	4	5	6
13. Serbest zamanlarımın çoğunu egzersiz yaparak geçiriyorum.	1	2	3	4	5	6
14. Umduğumdan daha uzun süre egzersiz yaparım.	1	2	3	4	5	6
15. Gergin hissetmekten sakınmak için egzersiz yaparım.	1	2	3	4	5	6
16. Devam eden fiziksel problemlere rağmen egzersiz yaparım.	1	2	3	4	5	6
17. İstediğim etkiye/yararlara ulaşmak için sürekli olarak egzersiz süremi artırırım	1	2	3	4	5	6
18. Egzersiz şiddetimi azaltamıyorum.	1	2	3	4	5	6

19. Egzersiz yapmayı seçiyorum böylelikle aile/arkadaşlarımla zaman geçirmekten kurtuluyorum.	1	2	3	4	5	6
20. Zamanımın büyük bir çoğunluğu egzersiz için harcanıyor.	1	2	3	4	5	6
21. Planladığımdan daha uzun egzersiz yaparım.	1	2	3	4	5	6

Appendix G: Visual Analog Scale

Şu an kendinizi ne kadar mutlu hissediyorsunuz? *

[illegible]

Şu an kendinizi ne kadar üzgün hissediyorsunuz? *

1 2 3 4 5 6 7 8 9 10

Hiç üzgün değilim ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ Son derece üzgünüm

Appendix H: Difficulties in Emotion Regulation Scale

Aşağıdaki cümlelerin size ne sıklıkla uyduğunu 5 üzerinden değerlendiriniz.

	Hemen hemen hiç	Bazen	Yaklaşık yarı yariya	Çoğu zaman	Hemen hemen her zaman
1. Ne hissettiğim konusunda netimdir	1	2	3	4	5
2. Ne hissettiğimi dikkate alırım	1	2	3	4	5
3. Duygularım bana dayanılmaz ve kontrolsüz gelir	1	2	3	4	5
4. Ne hissettiğim konusunda net bir fikrim vardır	1	2	3	4	5
5. Duygularıma bir anlam vermekte zorlanırım	1	2	3	4	5
6. Ne hissettiğime dikkat ederim	1	2	3	4	5
7. Ne hissettiğimi tam olarak bilirim	1	2	3	4	5
8. Ne hissettiğimi önemserim	1	2	3	4	5
9. Ne hissettiğim konusunda karmaşa yaşarım	1	2	3	4	5
10. Kendimi kötü hissettiğimde, bu duygularımı kabul ederim	1	2	3	4	5
11. Kendimi kötü hissettiğimde, böyle hissettiğim için kendime kızarım	1	2	3	4	5
12. Kendimi kötü hissettiğimde böyle hissettiğim için utanırım	1	2	3	4	5
13. Kendimi kötü hissettiğimde işlerimi yapmakta zorlanırım	1	2	3	4	5
14. Kendimi kötü hissettiğimde kontrolü kaybederim	1	2	3	4	5
15. Kendimi kötü hissettiğimde, uzun süre böyle kalacağıma inanırım	1	2	3	4	5
16. Kendimi kötü hissettiğimde sonuç olarak yoğun depresif duygular içinde olacağıma inanırım	1	2	3	4	5
17. Kendimi kötü hissettiğimde, duygularımın yerinde ve önemli olduğuna inanırım	1	2	3	4	5
18. Kendimi kötü hissettiğimde, başka şeylere odaklanmakta zorlanırım	1	2	3	4	5
19. Kendimi kötü hissettiğimde, kontrolden çıkmış hissederim	1	2	3	4	5

20. Kendimi kötü hissettiğimde, hala işlerimi sürdürebilirim	1	2	3	4	5
21. Kendimi kötü hissettiğimde, bu duygumdan dolayı kendimden utanırım	1	2	3	4	5
22. Kendimi kötü hissettiğimde, eninde sonunda kendimi daha iyi hissetmenin bir yolunu bulacağımı bilirim	1	2	3	4	5
23. Kendimi kötü hissettiğimde, zayıf biri olduğum duygusuna kapılırım	1	2	3	4	5
24. Kendimi kötü hissettiğimde, davranışlarımı kontrol altında tutabileceğimi hissedirim	1	2	3	4	5
25. Kendimi kötü hissettiğimde, böyle hissettiğim için suçluluk duyarım	1	2	3	4	5
26. Kendimi kötü hissettiğimde, konsantre olmakta zorlanırım	1	2	3	4	5
27. Kendimi kötü hissettiğimde, davranışlarımı kontrol etmekte zorlanırım	1	2	3	4	5
28. Kendimi kötü hissettiğimde, daha iyi hissetmem için yapabileceğim hiçbir şey olmadığına inanırım	1	2	3	4	5
29. Kendimi kötü hissettiğimde, böyle hissettiğim için kendimden rahatsız olurum	1	2	3	4	5
30. Kendimi kötü hissettiğimde, kendim için çok fazla endişelenmeye başlarım	1	2	3	4	5
31. Kendimi kötü hissettiğimde, kendimi bu duyguya bırakmaktan başka yapabileceğim bir şey olmadığına inanırım	1	2	3	4	5
32. Kendimi kötü hissettiğimde, davranışlarım üzerindeki kontrolümü kaybederim	1	2	3	4	5
33. Kendimi kötü hissettiğimde, başka bir şey düşünmekte zorlanırım	1	2	3	4	5
34. Kendimi kötü hissettiğimde, duygumun gerçekte ne olduğunu anlamak için zaman ayırırım	1	2	3	4	5
35. Kendimi kötü hissettiğimde, kendimi daha iyi hissetmem uzun zaman alır	1	2	3	4	5
36. Kendimi kötü hissettiğimde, duygularım dayanılmaz olur	1	2	3	4	5

Appendix I: The SCOFF Questionnaire

1. Rahatsız edici şekilde tok hissettiğiniz için kendinizi kusturuyor musunuz?

- ☐ Evet
- ☐ Hayır

2. Ne kadar yediğiniz konusunda kontrolü kaybettiğiniz için endişeleniyor musunuz?

- ☐ Evet
- ☐ Hayır

3. Son zamanlarda 3 ayda 6 kilodan fazla zayıfladınız mı?

- ☐ Evet
- ☐ Hayır

4. Başkaları çok zayıf olduğunuzu söylediği halde şişman olduğunuza inanıyor muydunuz?

- ☐ Evet
- ☐ Hayır

5. Yemeğin hayatınıza hükmettiğini düşünüyor musunuz?

- ☐ Evet
- ☐ Hayır

Appendix J: Food Choice Images



Appendix K: Debriefing

Bilgilendirme

Sayın Katılımcı,

Bu çalışmanın esas amacı sıklıkla egzersiz yapan kişilerin duygu düzenlemede yaşadığı zorlukların düzeyi ile duygusal yeme davranışları arasındaki ilişkiyi araştırmaktadır. Ancak bu bilginin verdiğiniz cevapları etkilemesini önlemek ve çalışmanın güvenilirliğini arttırmak amacıyla çalışmanın başında bu amaç, size olduğundan farklı aktarılmıştır. Çalışmama katılım sağladığınız için teşekkür ederim.

Çalışmayla ilgili herhangi bir sorunuz olursa bana e-mail adresim üzerinden ulaşabilirsiniz.