THE ROLE OF GENDER, SENSE OF COHERENCE AND PHYSICAL
ACTIVITY IN POSITIVE AND NEGATIVE AFFECT

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ABSTRACT

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The present study investigated the role of gender, sense of coherence and total physical activity in positive and negative affect. The participants were 376 (169 female, 206 male, and 1 missing value) volunteered students from different faculties of Middle East Technical University. Three questionnaires, namely, Sense of Coherence Scale (SOC), Physical Activity Assessment Questionnaire (PAAQ), and Positive and Negative Affect Schedule (PANAS) were administered to the students together with the demographic information sheet. Two separate stepwise multiple linear regression analyses were conducted to examine the predictive power of gender (coded as dummy variable), sense of coherence and total physical activity on positive and negative affect scores. Results revealed that, sense of coherence and total physical activity predicted the positive affect whereas sense of coherence predicted the negative affect of university students. Findings are discussed in the light of sense of coherence, physical activity and positive and negative affect literature.

Keywords: gender, sense of coherence, physical activity, positive affect, negative affect.

ÖZ

CİNSİYET, İÇ BÜTÜNLÜK VE FİZİKSEL ETKİNLİĞİN OLUMLU VE OLUMSUZ DUYGU DURUMU ÜZERİNDEKİ ROLÜ

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Bu araştırmada, cinsiyet, iç bütünlük ve fiziksel etkinliğin olumlu ve olumsuz duygu durumu üzerindeki rolü incelenmiştir. Araştırmaya Orta Doğu Teknik Üniversitesi'nin farklı fakültelerinden 376 (169 kadın, 206 erkek, ve 1 kişi cinsiyetini belirtmemiş) gönüllü öğrenci katılmıştır. Öğrencilere demografik bilgi formuyla birlikte, İç Bütünlük Ölçeği, Fiziksel Aktivite Değerlendirme Anketi ve Pozitif ve Negatif Duygu ölçeği uygulanmıştır. Araştırmanın bağımsız değişkenleri olan cinsiyet (dummy değişken), iç bütünlük ve fiziksel etkinliğin olumlu ve olumsuz duygu durumunu yordama gücünü incelemek için 2 farklı adımsal çoklu regresyon analizi yapılmıştır. Sonuçlar, iç bütünlük ve fiziksel aktivitenin olumlu duygu durumunu; buna karşılık iç bütünlüğün olumsuz duygu durumunu yordadığını göstermiştir. Araştırmanın bulguları iç bütünlük, fiziksel etkinlik ve olumlu ve olumsuz duygu durumuna ilişkin literatürün ışığında tartışılmıştır.

Anahtar kelimeler: cinsiyet, iç bütünlük, fiziksel etkinlik, olumlu duygu, olumsuz duygu.

To My Family

and

To the People Who Love Me

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CHAPTER I

INTRODUCTION

1.1 Background of the Study

Stress is omnipresent in today's modern life and it is well known that cumulative effects of stress may result in physical and mental illness. Although certain amount of stress is unavoidable in people's life, some people differ in the way they cope with it and manage to stay healthy while others fail to do so and become ill (Kobasa, 1979).

A considerable body of research was conducted to examine the relationship between stress and illness in order to understand "why people become ill or lose their mental health". Nonetheless, beginning with the era of positive psychology, the interest has shifted from the factors that limit health to the factors that promote health (Ironson & Powell, 2005). Within this era, the term salutogenesis (origins of health) was first used by Aoron Antonovsky for the place of the term pathogenesis (origins of disease) (Almedom, 2005). Then the researchers started to ask "how do people manage to stay healthy?" rather than "why do people get ill or develop disease X?" This was a reorientation to stress and illness research.

Aoron Antonovsky (1979, as cited in Lindström & Eriksson, 2005), while originally interviewing Israeli women about the adaptation to menopause, studied a group of women with experiences from the concentration camps of the Second World War who despite stayed healthy. Then he raised the salutogenic question of why and how these people stayed healthy despite all these. In explaining the reason of these women's staying healthy, Antonovsky postulated that it was because of the way they viewed their life and their essence of existence, and he identified three

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components which constitute the so-called sense of coherence; (a) the ability of people to understand what happens around them, (b) to what extent they were able to manage the situation on their own or through significant others in their social network, and (c) the ability to find meaning in the situation. In 1987, he developed Sense of Coherence Scale (SOC) in order to measure the individuals' ability to maintain healthy despite stress based on these three components and named them as manageability (instrumental/behavioral component), meaningfulness (motivational component), and comprehensibility (cognitive component). However, as it was stated by the researchers (Eriksson & Lindström, 2005), although SOC was developed to measure these three components and there are many studies reporting mean values for them, Antonovsky himself intended to use the SOC scale as a measurement for the whole concept, rather than measuring the three sub-concepts separately.

For the last decades, many studies have been conducted to examine the possible effects of sense of coherence on health. For example, in one study (Nielsen & Hansson, 2007) conducted with adolescents who had experienced one or more severe stresses, it was found that the girls with high SOC scores reported significantly less illness symptoms. Boscaglia and Clarke (2007), in their study with women who had a recent diagnosis of gynecological cancer, found that the women who had high SOC scores had less vulnerability to demoralization which is defined as a dysphonic mood state commonly seen in medically ill patients with the core features of hopelessness, helplessness, loss of purpose and meaning, despair, and existential distress. Boscaglia and Clarke (2007) also found that women who had high SOC scores tended to show greater use of adaptive coping strategies and less reliance on non-adaptive strategies. Similarly, SOC is found to be strongly and negatively correlated with posttraumatic stress symptoms (Frommberger et al., 1999). As a result of several studies, researchers (Eriksson & Lindström, 2006; Flensborg-Madsen et al., 2006; Flensborg-Madsen et al., 2005) concluded that, although sense of coherence seems to be closely related to physical health, the

relationship between two is more complex and seems to be weaker than its relation with mental health.

The literature review about the relationship between sense of coherence and mental health indeed suggests that sense of coherence is an important variable in explaining the stress and mental health. For example, Eriksson and Lindström (2006), in their review on studies of sense of coherence reported that people with high SOC were found to be more resilient under stress than people with low SOC and the stronger the SOC, the lower the level of symptoms and distress. Similarly, SOC is found to be important in increasing the quality of life of individuals with mental illnesses, such as schizophrenia (Eriksson & Lindström, 2007). To summarize the literature on the relation between sense of coherence and mental health, it is reported that sense of coherence measured by SOC scale is strongly and negatively associated with anxiety, anger, burnout, demoralization, hostility, hopelessness, depression, perceived stressors, and post-traumatic stress disorder. The stronger the sense of coherence, the less the symptoms of perceived depression are. Especially the meaningfulness as one of the components of SOC scale was the strongest explanatory factor for the absence of depression measured by BDI (Erikson, Lindström, & Lilja, 2007). However, Gana (2001) stated that adversity and stressful experiences do not affect psychological well-being directly, but do so indirectly via a mediator, sense of coherence. The buffering effect was demonstrated through multi-group analyses. In other words, strong sense of coherence seems to help people to mobilize their resources, promote effective coping, and resolve tension in a salutary manner (Antonovsky, 1979, as cited in Sullivan, 1993).

Although there are large numbers of studies investigating the relationship between sense of coherence and several mental health related concepts, a limited number of studies examined the role of coherence both in positive and negative affect. Only in one study (Kravetz, Drory, & Florian, 1993), researchers reported a considerable overlap between sense of coherence and negative affectivity. Therefore, in the present study the role of sense of coherence in positive and negative affect was

examined together with physical activities based on the suggestions of the literature (Nielsen & Hansson, 2007) which underlines two possible mechanisms through which sense of coherence may be protecting people's mental health from the mal effects of stress. First, sense of coherence may specifically protect against the effects of stress since people with a high sense of coherence tend to consider a stressor as a challenge more often rather than a threat. Second, it may also protect against the effects of stress in an indirect manner since it is often associated with positive health behaviors. The relationship between sense of coherence and positive health behaviors was also supported by the research (e.g., Frenz, Carey, & Jorgensen, 1993), yielding that people who have higher SOC scores are more likely to engage in health promoting behaviors (e.g. exercise) and less likely to engage in health-damaging behaviors (e.g. drinking). Based on these suggestions and findings, in the present study, the role of sense of coherence in positive and negative affect was examined together with physical exercise or, with a more recent general conceptualization, total physical activity that individuals engage in their daily life.

Physical exercise is one of the most commonly used health behaviors to explain the stress-mental health relationship together with salutogenic personality factors (Kobasa, Maddi & Puccetti, 1982). Although its effects on physical health have been widely studied, it is in the last twenty years that its possible effects in stress-mental health relationship became of interest to the researchers. Singer, Hausenblas, and Janelle (2001) identified different paths in explaining how physical activity enhances mental health through preventing abnormal psychological states and enhancing psychological variables, such as, anxiety, depression, cognitive functioning, stress reactivity, mood, affect, self-esteem and so on. The first path through which exercise enhances mental health is its capacity to reduce the anxiety. In a meta-analysis study, authors examined 23 acute exercise and 38 chronic exercise studies and concluded that, these participants showed consistent reductions in both trait and state anxiety and the effect sizes were low to moderate. A second path through which exercise enhances the mental health is its antidepressant effect. As

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stated by other researchers (Hassmen, Koivula, & Uutela, 2000), exercise seems to be more related to the mood improvement in clinically depressed people than normal people. Therefore, it can be concluded that the antidepressant effect of exercise depends on the population and the presence or absence of depression.

The relationship between exercise and stress reactivity is also one of the areas of practical importance. The studies in the literature tend to compare the exercisers and non-exercisers in terms of their ability to recover after experiencing a psychological stressor (Singer, Hausenblas, & Janelle, 2001). These studies concluded that exercise behavior might contribute to a "hardy" personality type in the sense that exercise itself is a repeated psychological stress and when repeated, it helps people to learn to cope with it and construct a hardy personality or higher sense of coherence.

Besides all these psychological variables, exercise is also found to be directly related to mood and affect. For example, in a recently conducted study, physical activity was found to be related to enhanced mood in women during the menopause period (Elavsky & McAuley, 2007). A meta-analytic study yielded that exercise was related with improved mood in the elderly (Arent, Londers, & Etnier, 2000). Another meta-analytic study (Singer, Hausenblas, & Janelle, 2001) indicated that the effect of exercise on the positive mood is larger for individuals who are above the age of 40. A study (Watson, 1988) conducted with university students revealed that exercise is related to positive affect more than negative affect in non-clinical populations. More specifically, results of the study showed that although the effect of exercise was not significant, it had more effect on positive affect.

Although the effect of exercise on psychological health has been widely studied in the literature, in recent years, exercise has been considered as a component of a broader construct, i.e., physical activities which included activities involved in different dimensions of the life. Besides, as suggested by the researchers (Nguyen-Michel et al., 2006), total physical activity indexes are more comprehensive in

explaining the effect of exercise in perceived stress. Recently, a great variety of questionnaires has been developed to determine the physical activity level of people. As Salcı and Koçak (2001) stated, a good physical activity scale should include items measuring the specific activities as well as household activities in daily life and be as comprehensive as possible. Based on these recent trends and suggestions, in the present study, not only the measure of exercise but the total measures of physical activities which include exercise were used for the sake of reaching more comprehensive understanding regarding their role in positive and negative affect of university students.

In sum, the research suggests that sense of coherence and physical activity are significant in moderating the effects of stress, which may result in better psychological health. More specifically, as noted by the sports psychologists, physical activity is beneficial to psychological health as well as physical health; and as emphasized by the psychologists, sense of coherence is significant in stress and illness reduction and mood-affect regulation. Given these complex associations among sense of coherence, physical activity, and psychological health and the lack of research investigating the relationships of all, it was believed that further research is needed to assess the significant effects of sense of coherence and physical activity on mental health, which is operationally defined as high positive affect and low negative affect in the present study.

1.2 Purpose of the Study

In the light of all these theoretical arguments and findings, purpose of the present study was to examine the relationships of sense of coherence, total physical activity and positive-negative affect among male and female university students. More specifically, the predictive powers of gender, sense of coherence and total physical activity on positive and negative affect were examined. It was expected that both sense of coherence and total physical activity would be positively correlated with positive affect, and negatively correlated with negative affect. It was also expected that when taken together, sense of

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coherence and total physical activity would have more predictive power for both positive and negative affect than they have alone. Gender was also controlled to check whether it plays a role in these relationships.

Research Questions

1. To what extent Positive Affect as measured by Positive and Negative Affect Schedule is predicted by gender, sense of coherence and total physical activity?

2. To what extent Negative Affect as measured by Positive and Negative Affect Schedule is predicted by gender, sense of coherence and total physical activity?

1.3 Significance of the Study

The present study aims at investigating the role of gender, sense of coherence and total physical activity in predicting the positive and negative affect. The importance of the study is twofold: research and counseling practices.

Firstly, although there is clear evidence that people who has more anxiety, depression, lower positive mood and self-esteem tend to have more improvement after physical activity (Singer, Hausenblas, & Janelle, 2001), the findings in the normal populations do not represent that much clear results. Hence, the effects of physical activity on affect should be elaborated more in the normal populations. Similarly, while most of the major research on sense of coherence focused on people who have an illness, disability or another source of stress, the present study will be illuminating its effects within the normal population.

Secondly, although there are many studies regarding the effects of exercise on psychological health, one recent study (Nguyen-Michel et al., 2006) examining the effects of exercise behavior (as a leisure activity) on perceived stress among the university students could not find a significant relationship and the researchers

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argued that exercise as a leisure activity is not sufficient to explain the perceived stress but total physical activity indexes should be better used to explain these complex constructs since they are more comprehensive. In other words, it is implied that it is not preferable to reduce the physical activity construct to exercise behavior only. Hence, present study is of importance since *total physical activity level* of individuals were measured which includes work, school and household related activities together with exercise behavior and many other measures. There is a great variety of questionnaires to determine the total physical activity level of people and it is essential to choose the one which is suitable for the purpose and the population of the study. As Salcı and Koçak (2001) indicated, a good physical activity scale should ask the amount of sleeping in a day and include items measuring the gender specific activities such as repair work items for men, and household activities for women. Also, a good physical activity scale should be as comprehensive as possible, measuring activities involved in different dimensions of the life. For this reason, Physical Activity Assessment Questionnaire (PAAQ) specifically developed for Turkish population by Karaca, Ergen, and Koruç (2000) and validated for university students (Karaca, 2007), was used in the present study.

Thirdly, in the literature, mood, affect, well being, and psychological benefits are used interchangeably in studies examining the effects of physical activity which makes it hard to compare the findings of the different studies (Singer, Hausenblas, & Janelle, 2001). As Singer et al. stated, according to Lazarus, mood and affect are different concepts in terms of time. While mood represents a transient state, affect is something more enduring. Since affect is made of moods and emotions (Cropanzano et al. 2003), it is a more comprehensive construct. Therefore, the present study is of importance in using measures of affect rather than mood in order to reach more comprehensive conclusions regarding the relationships among the variables concerned.

The fourth important point is that, there are different instruments measuring the affect. POMS (Profile of Mood States) which predominantly measures the

negative affect (Steinberg et al., 1998), was one of the widely used scales in the literature. However, since physical activity is more beneficial in increasing positive affect rather than decreasing negative affect in normal populations (Watson, 1988), positive affect is given equal importance in this study. In addition, different studies use different scales to measure the affect. For example, Steinberg et al. (1998) used an adjective list composed of 24 positive and 23 negative mood adjectives and stated that physical activity did not have a significant effect on the affect of university students, which was contrary to the literature. A possible explanation for this contradictory finding may be that the study did not have a widely accepted reliable and valid measure of affect. Hence, in this study, PANAS (Positive Affect Negative Affect Scale), which is a reliable and valid measurement of affect, was used. This will hopefully pave the way for an easier communication amongst the researchers in the field. Besides, this study is also significant since it examines the effects of total physical activity and sense of coherence both separately and together.

As for the significance of the study for counseling practices, it can be stated that the findings of the present study are more suitable for counseling purposes since it was conducted with the normal population rather than clinical samples. Moreover, the study was conducted with university students and in the literature it is very often highlighted that health habits established during this late adolescence-young adulthood period are of great importance for later life (Simpson et al., 2002) and also it is a very vital period for the development of sense of coherence as well (Antonovsky & Sagy, 1986). Therefore, this study is of importance for illuminating one of the most important periods of development.

The literature also shows that university students report using ineffective stress management techniques (Lawrence & Schank, 1993). While physical activity might help college students to deal more effectively with stress and to elevate mood and affect, it is shown in many studies that university students are not physically active enough (Irwin, 2004; Butler et al., 2004; Huang et al., 2003; Racette et al., 2004). In the light of this study, the university counselors may help and guide the

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students to be more physically active to cope with stress and regulate their mood and affect states. In addition, with the special contribution of this study, the university counselors may encourage them not only to exercise but also to increase their total physical activity in general which includes all work, school, and house related activities.

Last but not the least, one very recent empirical finding is that an education program designed to strengthen sense of coherence resulted in significant change in SOC scores over time especially among the participants who had initial low SOC scores (Morrison & Clift, 2006). This finding is very inspiring in the sense that university counselors may design group-counseling sessions with students to enhance their sense of coherence and inseparably the mental health.

1.4 Definition of Terms

In this study, the predictor variables were gender, sense of coherence and total physical activity; and the criterion variables were positive affect and negative affect.

Sense of coherence: It is defined as a person's enduring attitude towards life (Eriksson & Lindström, 2007) and capacity to respond to stressful situations (Lindström & Eriksson, 2005). Sense of coherence is a global orientation to view the life as comprehensible, manageable, and meaningful which constitute the three sub-components of the construct.

Comprehensibility: The person with high sense of comprehensibility expects that future stimuli will be predictable or, even when they do come as surprises, will be orderable and explicable (Morrison & Clift, 2006).

Manageability: The person with high sense of manageability has the sense that, either aided by their own resources or by those of trustworthy others, they will be able to cope (Morrison & Clift, 2006).

Meaningfulness: The person with high sense of meaningfulness will not be overcome by unhappy experiences but will experience them as challenges, be determined to seek meaning in them, and do his or her best to overcome them with dignity (Morrison & Clift, 2006).

In the current study, sense of coherence is operationally defined as the total score obtained by the SOC-13 scale developed by Antonovsky (1987).

Total Physical Activity: The concept of total physical activity covers not only the sports/exercise behavior but also the activities related to work, school, transportation, climbing stairs, and household jobs together with information about age, height, weight and daily amount of sleep (Karaca, Ergen, & Koruç, 2000).

In the current study, total physical activity is operationally defined as the total score obtained from the PAAQ (Physical Activity Assessment Questionnaire) developed by Karaca, Ergen, and Koruç (2000), which is calculated as the summation of the given sub-scales.

Positive Affect: Refers to the degree to which individuals experience enthusiasm, alertness, and pleasurable engagement with the environment (Watson, Clark, & Tellegen, 1988). In the current study, it is operationally defined as the total score obtained from the 10 positive affect adjectives of PANAS (Positive and Negative Affect Schedule).

Negative Affect: Refers to the degree to which individuals experience aversive mood states and subjective distress (Watson, Clark, & Tellegen, 1988). In the current study, it is operationally defined as the total score obtained from the 10 negative affect adjectives of PANAS (Positive and Negative Affect Schedule).

CHAPTER II

REVIEW OF THE LITERATURE

This chapter presents the literature related to the sense of coherence, physical activities, and positive and negative affect. The first section is devoted to the presentation of the concept of sense of coherence. The second section includes research on sense of coherence and psychological health. The third section presents the relationship between sense of coherence and physical activity and the rationale for taking sense of coherence into consideration with physical activity in the present study. The fourth section displays the conceptualization of physical activity in the present study. The fifth section includes research regarding the relationship between physical activities and psychological health. Finally, in the sixth section, Turkish literature on sense of coherence, physical activities, and positive and negative affect is presented.

2.1 The Conceptualization of Sense of Coherence

2.1.1 Definition of Sense of Coherence

The concept of sense of coherence was first introduced by Antonovsky (1979, as cited in Frenz, Carey, & Jorgensen, 1993) which shed light to health literature. Trying to explain the reason of the women's staying healthy despite their painful experiences in the concentration camps, Antonovsky had postulated that it was because of the way they viewed their life and their essence of existence. In his research, three components have emerged which constitute the so-called sense of coherence: (a) the ability of people to understand what happens around them, (b) to what extent they were able to manage the situation on their own or through significant others in their social network, and (c) the ability to find meaning in the

situation. Based on these components, Antonovsky defined Sense of Coherence (SOC) as

> a global orientation that expresses the extent to which one has a pervasive, enduring though dynamic feeling of confidence that (a) the stimuli deriving from one's internal and external environments in the course of living are structured, predictable and explicable; (b) the resources are available to one to meet the demands posed by these stimuli; and (c) these demands are challenges, worthy of investment and engagement (1988, as cited in Frenz, Carey, & Jorgensen, 1993, p. 145).

Based on this definition, Antonovsky developed Sense of Coherence Scale (SOC) in 1987 to measure the individuals' ability to maintain health despite the stress that they experience. This 29-items version of SOC scale was composed of three components as they were identified in the definition of sense of coherence which were named as "comprehensibility", "meaningfulness", and "manageability" (as cited in Eriksson & Linström, 2005). In 1987, Antonovsky developed another 13-items version of the SOC scale with the same component which has still been widely used in the literature. Although defined as a three-dimensional construct, Antonovsky himself tended to use the SOC scale as a measurement for the whole concept, rather than measuring the three sub-concepts separately. However, these components were extensively discussed and clarified in the literature.

Comprehensibility is the cognitive component of the SOC. It refers to the extent to which the person perceives the stimuli that confronts him, deriving from the internal and external environments, as making cognitive sense as information that is ordered, consistent, structured, and clear. The person scoring high on the sense of comprehensibility expects that stimuli he encounters in the future will be predictable, ordered, and explicit (Lindström & Eriksson, 2005). Stating differently, Geyer (1997) proposed that if the person is high in this dimension of cognitive controllability, then the social world is interpreted as rational, understandable, structured, ordered, consistent, and predictable. The expectation of a person with high comprehensibility was stated by Morrison and Clift (2006) that the future

stimuli will be predictable or, even when they do come as surprises, will be orderable and explicable. In short, comprehensibility is the belief that "life makes sense" (Bowman, 1997).

Manageability is the instrumental/behavioral component of SOC. It is the extent to which a person perceives that resources are at his disposals and adequate to meet the demands posed by the stimuli that bombards him. "At a person's disposal" refers to resources under the person's own control or to resources controlled by the legitimate others (Lindström & Eriksson, 2005). Following this, it was suggested by Morrison and Clift (2006) that people with high sense of manageability have the sense that, either aided by their own resources or by those of trustworthy others, they will be able to cope. In sum, high sense of manageability results in the sense that "the problem will be bearable" (Bowman, 1997).

Meaningfulness is the motivational component of SOC. It refers to the extent to which the person feels that life makes sense emotionally, that problems and demands are worth investing energy in, are worthy of commitment and engagement, sees as challenges rather than burdens (Lindström & Eriksson, 2005). According to Morrison and Clift (2006), person with high sense of meaningfulness will not be overcome by unhappy experiences but will experience them as challenges, be determined to seek meaning in them, and do his or her best to overcome them with dignity. In other words, when there is high sense of meaningfulness "life is seen as a challenge rather than as a burden" as stated by Bowman (1997).

The interrelated nature of these three components has been supported by the researchers. For example, Sullivan (1993) mentioned that a person who views life as comprehensible will probably find it manageable, too. Or a person, who does not think that life is meaningful, will not struggle, even if the situation is manageable. So it is not anticipated that the three components will function independently.

Depending on these three SOC sub-components and the dynamic interrelationships among them, Antonovsky's sense of coherence concept allowed

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prediction of at least eight personality type permutations. For instance, high comprehensibility and low manageability and meaningfulness scores would predict an "inherently unstable" pattern, while high scores on all three subscales or low scores on all three would predict a "stable" pattern, respectively viewing the world as highly coherent or incoherent (Almedom, 2005).

Lindström and Eriksson (2005) argued that, as being composed of these three components, SOC reflects a person's view of life and capacity to respond to stressful situations. It is a global orientation to view the life as structured, manageable, and meaningful or coherent. It is a personal way of thinking, being, and acting, with an inner trust, which helps people to identify, benefit, use, and re-use the resources at their disposal.

Antonovsky described SOC as a disposition rather than a personality trait. He considered the latter as global and enduring with relevance to behavior. In contrast, he defined dispositions as located at a lower level of abstraction, and without direct relevance for overt behavior (Antonovsky, 1987, as stated in Geyer, 1997). To briefly define, SOC is an enduring attitude towards life (Eriksson & Lindström, 2007).

2.1.2 Sense of Coherence and Other Related Concepts

In the literature, the concept of sense of coherence has been widely studied in relation to some other related concepts among which the general resistance resources, hardiness, self-efficacy, and resilience are the most emphasized ones.

The concept of general resistance resources (GRRs) was introduced together with the construct of sense of coherence and in fact it is an indispensable part of the Antonosky's salutogenic theory. GRRs include biological, material, and psychosocial factors in a person's life. Antonovsky postulated that individuals mobilize their "generalized resistance resources" in order to manage stress and overcome the pathogenic effects of everyday environmental insults and inordinate demands (as

cited in Almedom, 2005). Koelen and Lindström (2005) proposed that these resources help people to perceive their lives as consistent, structured, and understandable. They listed these resources as material (money), ego identity, knowledge, intelligence, coping strategy (rational, flexible, far sighted), social support, commitment (continuance, cohesion, control), cultural stability, magic, religion/philosophy (a stable set of answers) , and a preventive health orientation. As proposed by Lindström and Eriksson (2005), the GRRs could be found within people as resources bound to their capacity but also they can be found in the people's immediate and distant environment as of both material and non-material qualities from the person to the whole society.

Sullivan (1993) mentioned that GRRs function in such a way that the phenomena are perceived as patterned rather than chaotic; meaningful rather than nonsensical; and lawful rather than randomly determined. According to Eriksson and Lindström (2005), GRRs are shaped by life experiences characterized by consistency, participation in shaping outcome, and a balance between under load and overload. Therefore, it can be concluded that the more the person encounters with these kinds of life experiences, the more his GRRs will develop.

Regarding the relationship between GRRs and SOC, Morrison and Clift (2006) argued that the relationship is two-way. The GRRs are seen as leading to life experiences which promoted the development of strong SOC. So, the more GRRs the person has, the better developed will be his SOC. When it comes to the other way of the relationship, it is stated that SOC is the ability to use these GRRs when needed. Sullivan (1993) also supported this view and mentioned that the relationship between GRRs and SOC is dynamic and synergistic. The individual's perception of available GRRs enhances the development of a sense of coherence, and in turn a strong sense of coherence enables the individual to mobilize whatever GRRs are at his disposal. On the other hand, Koelen and Lindström (2005) compared the importance of GRRs and SOC in the salutogenic view and concluded that, the more important than the

resources themselves, is the ability to use these resources which is the sense of coherence.

When it comes to the other salutogenic concepts that are similar to the sense of coherence, Kobasa's concept of "hardy personality" (composed of control, commitment and challenge) and SOC (composed of comprehensibility, manageability and meaningfulness) have almost the same components with very similar contents (Geyer, 1997).

As it was discussed by Sullivan (1993), Kobasa's *control* includes both *manageability* and *comprehensibility* in itself meaning that "I can comprehend and manage". Here there is a slight but very important distinction with Antonovsky's manageability in the sense that, in Antonovsky's theory, the individual need not perceive events to be under his direct control, but only that they are under some kind of control, and to have the conviction that he may participate in shaping the outcome.

Geyer (1997) also argued that Kobasa's *commitment* is almost same with Antonovsky's *meaningfulness* in the sense that they both imply that the individual is motivated and Kobasa's *challenge* (seeing events as challenges rather than threats) can be considered between *comprehensibility* and *meaningfulness*. In short, hardiness and SOC have more or less the same range of explanation. However, SOC is somewhat more feasible than hardiness in the sense that there is a short, practical SOC scale, but hardiness is measured with different scales prepared for other purposes.

Regarding the concept of *self-efficacy*, Bandura (1977, p.194, as cited in Geyer, 1997) identified two main differences between self-efficacy and sense of coherence: First, as being different from hardiness and SOC, self-efficacy concept aims to explain the behavioral change. It tries to explain the conviction that one is able to perform certain behaviors in order to attain goals or to cope with a stressor. According to Bandura, expectations of mastery determine the both the probability of that coping behavior is initiated and the duration of that behavior. This also leads to

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approaching certain situations and avoiding others that are likely to exceed personal abilities. As the second difference, the strength of self-efficacy is dependent on the differential perception of situations and on corresponding appraisals of coping abilities, rather than a generalized disposition. In this sense, it is different from the SOC which is a relatively permanent global view independent of specific situations. In other words, in order to be maintained, self-efficacy needs repeated confirmation over time, while SOC is assumed to be constant (Geyer, 1997).

Another concept is the *resilience* which has been discussed in relation to sense of coherence. Resilience is the capacity to rebound from crisis. Almedom (2005) argued that the theory of salutogenesis, operationalized by the sense of coherence construct, is inclusive of the related concepts of resilience and hardiness. Moreover, it is grounded in robust primary research of cross-cultural relevance.

In sum, researchers (Koelen & Lindström, 2005) concluded that Kobasa's *hardiness*, Bandura's *self-efficacy* and *resilience*, and Antonovsky's *sense of coherence* are all salutogenic theories focusing on prevention rather than cure. Underlining the similarities of all these concepts, Geyer (1997) proposed that together with resilience and hardiness, these concepts all focus on (the availability of) resources and on the (learned) ability to deal with and use those resources. However, as using the term "salutogenesis" first in the literature, and as having a practical, easy to use, reliable and valid scale, Antonovsky took the most of the credit in this research area.

2.2 Sense of Coherence and Psychological Health

It was found in many studies that SOC is strongly related to perceived health, especially mental health. Since most of the studies are far from giving cause-effect relationships, it was argued in the literature that the relationship between SOC and mental health may be two-way (Geyer, 1997). Some studies argue that poor mental health situation may result in lower SOC levels while the most of the literature argues that SOC as a predictor determines the mental health of the individuals.

To begin with the first possible direction of the relationship, in a study (Carmel & Bernstein, 1990) conducted with a sample of students in which three measurements were taken over two years, it was found that the higher the experienced distress, the higher the trait anxiety, and the lower the SOC implying that SOC may be influenced by situational variables and other mental health conditions.

Some other studies point to a similar possibility that physical health situation may affect the SOC, rather than vice versa. For example, Margalit, Meyser, and Avraham (1989) comparing the fathers of disabled and nondisabled children found that, fathers of handicapped children had a lower SOC and it is hard to argue that fathers' low SOC resulted in handicapped children. This study was also an example for SOC's being affected by external variables.

However, although some situational variables may have a certain degree of effect on the level SOC, most of the studies in the literature point out the other possible way of the relationship which is the effect of SOC, as a predictor, on people's mental health. First of all, SOC seems to be closely related with health behaviors, such as drinking, which may in turn affect the overall health of the individuals. For example, a study (Antonovsky, Hankin, & Stone, 1987) conducted with men who are daily drinkers indicated that 62% of these drinkers obtained low SOC scores although the definition of "low" was not provided in the study. While a direct linear relationship was not suggested, the authors proposed that having a "weak" SOC may contribute to heavy drinking as a way of coping with stress. Similar with this suggestion, Zayne (1997) reported that people with a high SOC tend to use more adaptive coping strategies and show less reliance on non-adaptive strategies.

Regarding the relationship between adaptive coping and SOC, it is well stated in the literature that SOC has a mediating effect between stress and illness. Eriksson and Lindström (2006), in their review on studies of sense of coherence reported that

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people with high SOC were found to be more resilient under stress than people with a low SOC and the stronger the SOC, the lower the level of symptoms and distress.

To explain the relationships of stress, sense of coherence and mental health, Gana (2001) stated that adversity and stressful experiences do not affect psychological well-being directly, but do so indirectly via a mediator, sense of coherence. The buffering effect was demonstrated through multi-group analyses. In other words, strong sense of coherence seems to help people to mobilize their resources, promote effective coping, and resolve tension in a salutary manner (Antonovsky, 1979, as cited in Sullivan, 1993).

As an example of the empirical findings regarding the relationships of stress, sense of coherence, and mental health, Nielsen and Hansson (2007) conducted a study with a hypothesis that sense of coherence measured by SOC scale might modify a negative health outcome among adolescents who had experienced one or more severe stresses. The results yielded that girls with high SOC reported significantly less illness symptoms.

Sense of coherence seems to be very effective in coping with severe illnesses as well which is an important source of stress. For example, Boscaglia and Clarke (2007) conducted a study with women who had a recent diagnosis of gynecological cancer. The results revealed that the women who have a high SOC had a less vulnerability to demoralization which is defined as a dysphonic mood state commonly seen in medically ill with the core features of hopelessness, helplessness, loss of purpose and meaning, despair, and existential distress. Boscaglia and Clarke also reported that people who have a strong SOC tend to show greater use of adaptive coping strategies and less reliance on non-adaptive strategies.

Similarly, SOC is found to be strongly and negatively correlated with posttraumatic stress symptoms (Frommberger et al., 1999) which also implies that SOC helps people to cope with the traumatic experiences they face in life in an adaptive manner. In a very recent study (Eriksson & Lindström, 2007), it was found

that SOC is important in increasing the quality of life of individuals with mental (e.g. schizophrenia) and physical illnesses (e.g. coronary heart disease) which also implies the presence of some adaptive way of coping with the source of stress.

To summarize the literature on the relation between SOC and mental health, it is reported that SOC is strongly and negatively associated with fatigue, loneliness, anxiety, anger, burnout, demoralization, hostility, hopelessness, depression, perceived stressors, and post-traumatic stress disorder. The stronger the SOC, the less the symptoms of perceived depression are. Especially the meaningful activities, one of the questions in the SOC scale, were the strongest explanatory factors for the absence of depression measured with BDI (Kuppelomaki & Utriainen, 2003; Erikson, Lindström, & Lilja, 2007).

Although there are large numbers of studies investigating the relationship between sense of coherence and several mental health related concepts, a limited number of studies examined the role of coherence in positive and negative affect. In one study (Kravetz, Drory, & Florian, 1993), researchers reported a considerable overlap between SOC and negative affectivity.

In summary, sense of coherence may be protecting people's mental health from the mal effects of stress through two possible mechanisms. First, sense of coherence may specifically protect against the effects of stress since people with a high sense of coherence tend to consider a stressor as a challenge more often rather than a threat. It strengthens the resilience and develops a positive subjective state of health. Second, it may also protect against the effects of stress in an indirect manner since it is often associated with positive health behaviors (Nielsen & Hansson, 2007). Stating differently, studies report that people who have a high SOC are more likely to engage in health promoting behaviors (e.g. exercise) and less likely to engage in health-damaging behaviors (e.g. drinking) (Frenz, Carey, & Jorgensen, 1993).

Besides its considerable importance in explaining the mental health, what is more inspiring in the SOC and mental health literature is the finding that SOC can be

learned. In one study (Morrison & Clift, 2006) a program was developed to increase the SOC of the students who have been hospitalized for several occasions with the full range of diagnosis; paranoid schizophrenia, bi-polar disorder (manic depression), clinical depression and the affective disorders. At the end of the study, people who had low initial sense of coherence level (operationally defined as a score below 52 from the sense of coherence scale, 13-item version) made statistically significant positive changes. Those who have high initial sense of coherence level remained stable and did not statistically significant change. Researchers concluded that those with weak SOC (or a weakened SOC through a major life experiences such as trauma), can become stronger and improve their position on the health/disease continuum. It is the maturity of an individual SOC score, rather than age that indicates the possibility for strengthening a SOC score. Besides, researchers, while searching for the mechanism for change, found that the increase in positive affect is the ultimate contributor of increased sense of coherence score.

2.3 Sense of Coherence and Physical Activities

As concluded by Eriksson and Lindström (2006), SOC seems to have a main, moderating, and mediating role in the explanation of health. Read et al. (2005) stated that SOC was found to promote people's health through three different channels; first of all, people who have high SOC are less vulnerable to mal effects of stress since they do have healthier coping strategies. As the second, physiologically, people who have high SOC tend to be able to keep their body homeostasis during stressful situations. Thirdly, people who have high SOC tend to engage more with health-promoting behaviors, such as exercise.

Hence, although SOC is an important contributor for the development and maintenance of health, it does not alone explain the overall health. Therefore, in the literature, SOC is usually examined with different variables, and physical exercise is one of the most commonly used health behaviors to explain the stress-mental health

relationship together with salutogenic personality factors (Kobasa, Maddi, & Puccetti, 1982).

This section aims to display the findings which illuminate the relationship between sense of coherence and physical activity and the rationale behind examining these variables together in the present study.

In one cross sectional study (Hassmen, Koivula, & Uutela, 2000), it was found that those who exercise at least twice a week reported higher levels of sense of coherence and a stronger feeling of social integration than their less frequently exercising counterparts. Authors stated that exercise seems to reduce depression, anger, hostility and perceived stress which may result in decreased negative affect; and increased sense of coherence, health locus of control, perceived health, perceived fitness which may enhance positive affect.

Kuupelomaki and Utriainen (2003) stated that although in the literature it is well documented that SOC promotes self-perceived health and pave the way for effectively coping with stress, the specific relation between SOC and specific health habits are not that clear. Taking sports as a specific health habit, the study found that frequent physical exercise, defined as more than three times in a week, was significantly related to high SOC. The findings of another study (Honkinen et al., 2005) conducted with adolescents indicated that physical exercise was the most strongly associated variable with perceived health and SOC.

A study (Sollerhed, Ejlertsson, & Apitzsch, 2005) conducted with adolescents showed positive relationships between SOC and attitudes to physical education and physical activity in leisure time, indicating that SOC might influence the attitudes to physical education and persistent physical activity patterns. However, since the study cannot give any causality, the opposite explanation may also be true: positive attitudes to physical education and physical activity could influence the actual SOC among the adolescents. The authors argue that it might be possible to affect the development of SOC through positive experiences of physical exercises in school.

There are also some studies which make predictions about the direction of the relationship. A study (Read et al., 2005) conducted with 65-69 year-old participants took exercise as independent variable, SOC as mediator and subjective physical health, subjective social health and subjective mental health as dependent variables. The results revealed that exercise has a direct effect only on subjective physical health. Its effect on other dependent variables was mediated by SOC of the individuals. Researchers concluded that, since the study is far from claiming any causality, it may be that people who have a strong sense of coherence create more GRR (such as exercise opportunities) for themselves.

Edwards (2006) examined the relationship between exercise, SOC and their effect on mental health. In his study, well being profile was composed of different measures for mood, life style, satisfaction with life, SOC, and coping with stress. The specific finding of the study about the exercise and SOC was that, regular physical exercise of at least two months' duration in health clubs resulted in a significant increase in participants' SOC level. And this improvement in well being within the group of 26 exercisers was not predicted by any other variables such as particular health club affiliation, length of membership, age, gender, home language, years of exercise experience, estimation of well being improvement and the type, amount, duration or intensity of exercise.

In sum, although the direction of the relationship is not clear in the literature since there are not many longitudinal designs, it seems obvious that SOC and physical activity are quite related and together play an important part in explaining the psychological well-being of individuals. Hence they were taken into consideration together in the present study.

2.4 The Conceptualization of Physical Activity

In the present study, instead of exercise, total physical activities of individuals were assessed by taken into some considerations. First of all, although the effects of single bout of exercise is well documented in the literature, the picture about the

effects of chronic exercise is not that clear (Steinberg et al., 1998). What is more, it is well stated in the literature that chronic exercise produces larger effects than acute exercise, particularly if the chronic exercise program is longer than 12 weeks (Singer, Hausenblas, & Janelle, 2001). Therefore, the aim of the present study was to focus on long-term physical activities of individuals.

A second consideration was that, the type, duration, intensity, and difficulty of the exercise/sports seems to have an effect on the findings, resulting in sometimes controversial findings in the literature as stated in the Handbook of Sports Psychology (Singer, Hausenblas, & Janelle, 2001). Hence, the aim of the present study was to make a more global operational definition such that it simplifies the interpretation of the findings of the studies.

A third consideration was that altough there are many studies in the literature searching for the relationship between exercise/sports and mental health, very few studies focus on the effects of total physical activity on mental health. In fact, one very recent study (Nguyen-Michel et al., 2006) examining the effects of exercise behavior (as a leisure activity) on perceived stress among the university students could not find a significant relationship and the researchers argued that exercise as a leisure activity is not sufficient to explain the perceived stress but total physical activity indexes should be better used to explain these complex constructs since they are more comprehensive. In other words, it is implied that it is not preferable to reduce the physical activity construct to exercise behavior only.

Hence, physical activity is operationally defined as *total physical activity level* of individuals in the present study, in which subscales include work, school related activities and household jobs together with exercise behavior and many other measures.

2.5 Physical Activity and Psychological Health

Although the effects of exercise on physical health have been widely investigated, it is only within the last 15 years that the effects of exercise on psychological health became of interest to the researchers (Singer, Hausenblas, & Janelle, 2001). There are several studies indicating that physical activity enhances mental health through preventing abnormal psychological states and enhancing positive mood. Exercise has an effect on different psychological variables, such as, anxiety, depression, cognitive functioning, stress reactivity, mood, affect, self-esteem and so on. Some of the findings are summarized below.

In a meta-analysis study (Singer, Hausenblas, & Janelle, 2001), researchers examined 23 acute exercise and 38 chronic exercise studies and found that, these participants showed consistent reductions in both trait and state anxiety and the effect sizes were low to moderate. A second path through which exercise enhances the mental health is its antidepressant effect and exercise seems to be more related to the mood improvement in clinically depressed people than normal people.

The relationship between exercise and stress reactivity is also one of the areas of practical importance. The studies in the literature tend to compare the exercisers and non-exercisers in terms of their ability to recover after experiencing a psychological stressor (Singer, Hausenblas, & Janelle, 2001). For example, in quasi-experimental studies, the fit and non-fit subjects were given frustrating cognitive events and their physiological and psychological reaction to stress level and the time they need to recover from these and turn back to their baseline were measured. To explain the difference between two groups, Singer, Hausenblas and Janelle (2001) claimed that exercise behavior might contribute to a "hardy" personality type in the sense that exercise itself is a repeated psychological stress and when repeated, it helps people to learn to cope with it and construct a hardy personality or higher sense of coherence.

Besides all these psychological variables, exercise is also found to be related to mood and affect which is the concern of the present study. Although there are many studies indicating the relationship between depression, anxiety and exercise especially in clinical populations, these studies represent only the negative affect. It is known that exercise is related to positive affect as well and both sides of the spectrum should be studied. Despite the fact that studies about its effect on positive mood are relatively new, even the limited studies at hand are encouraging. For example, in a recently conducted study (Elavsky & McAuley, 2007) it was found that physical activity is related to enhanced mood in women during the menopause period.

A meta-analytic review revealed that exercise was related with improved mood in the elderly (Arent, Landers, & Etnier, 2000). Another meta-analytic study (Singer, Hausenblas, & Janelle, 2001) indicated that the effect of exercise on the positive mood is larger for individuals who are above the age of 40. A study conducted with university students revealed that exercise is related to positive affect more than negative affect in non-clinical populations (Watson, 1988). Specifically, results of the study showed that although the effect of exercise was not significant, it had more effect on positive affect.

2.6 Research on Sense of Coherence, Physical Activity and Positive and Negative Affect in Turkey

To begin with the research concerning the sense of coherence, it can be stated that the construct was not widely studied in Turkey except some adaptation studies such as adaptation of family sense of coherence (Çeçen, 2007) and some translation, reliability and validity studies of SOC-13 scale (Lajunen, unpublished manuscript).

However, there are some studies conducted with Turkish immigrants. For example, Aycan (1997) studied Turkish immigrants' adaptation to Canada and found that sense of coherence moderated the relationship among employment-related experiences, psychological well-being, and adaptation. Another study (Baarnhielm,

2004) conducted with Turkish women living in Sweden suggested that Antonosky's sense of coherence may have relevance to restructuring illness, implying that people with high sense of coherence can cope better with their physical illnesses.

Concerning the literature on exercise/physical activity, it can be stated that it is much broader than sense of coherence literature in Turkey. For example, Koçak (2005) found that students, faculty and other staff of Middle East Technical University are not physically active and that lack of time was the major excuse for being physically inactive. The quality of life in older age was examined in another study (Lüleci, Hey, & Subaşı, 2008) and it was found that physical exercise habit was one of the predictors of quality of life among old people.

There are also studies concerning the effects of exercise on children. In one study (Özdirenç et al., 2005) the amount of physical activity of children with an age range of 9-11 was examined. It was found that, the children living in urban areas were more inactive and obese as compared to their peers living in rural areas. In a study (Fazlıoğlu, Tokgöz, & Baran, 2005) which examined the effects of a basic movement exercise program on children with autism concentrated on 5 skills: starting the movement according to the instruction, being able to understand and initiate action with movement, being able to continue movement that was already started, being able to finish the movement that was already started, and purposeful material use. At the end of the study, the researchers reported that each subject was able to acquire certain skills based on an intensive basic movement training program. Another study (Kin, Aşçı, & Koşar, 2002) examining the relationships among physical activity levels and psychomotor, psychosocial, and cognitive development of primary education students found that physical activity level was an important factor in determining students' psychomotor development although it did not have a significant effect on the other two variables.

The findings of the studies conducted with adolescents and university students, which constitute the sample of the present study, generally indicated that

physical activity is related to improved body satisfaction among the secondary school adolescent girls (Çok, 1990) and also among female university students (Çağlar, & Aşçı, 2006). In addition, in an empirical study, it was reported that a ten-week physical fitness program was effective in reducing trait anxiety and strengthening the physical self-perceptions of female university students (Aşçı, 2003).

Positive and negative affect is another area of study in Turkey. Gençöz (2000) should be mentioned first since she conducted the reliability and validity of PANAS, the affect scale used in the present study. She used the scale in different studies with different variables. For example, in a study examining the psychometric properties of the Turkish version of the Internalized Homophobia Scale (HIS) in gay men living in Turkey, Gençöz and Yüksel (2006) found that the IHS had significant positive correlation with negative affect and a negative correlation with positive affect.

In another study, Karakitapoğlu-Aygün (2004) stated that self-descriptions and identity orientations of university students were important in determining emotional well-being which was operationally defined with positive and negative affect although the positive and negative affect were measured with a scale other than PANAS.

Overall, it can be concluded that although the number of Turkish studies on physical activities/exercises and positive and negative affect are satisfactory, a research regarding the relationship between the two and the role of sense of coherence is still needed.

CHAPTER III

METHOD

In this chapter methodological details of the study are introduced. The first section describes the characteristics of the students who participated in the study. The second section introduces the data collection instruments. The procedure followed in the study is explained in the third section. In the fourth section, data analyses employed to the data is presented. Finally, the fifth section deals with the limitations of the study.

3.1 Participants

Convenient sampling procedure was used in the present study. Participants were 376 (169 female, 206 male and 1 missing value for gender) volunteered students from all grades of four faculties at Middle East Technical University except the Faculty of Architecture. The distribution of students by faculties were 32 (18 female, 14 male) in Arts and Sciences, 50 (19 female, 31 male) in Economic and Administrative Sciences, 166 (103 female, 63 male) in Education, and 123 (28 female, 95 male) in Engineering. In the sample, one person did not report gender and four persons did not report their department. Hence, these five persons were not included in this faculty by gender distribution. The students were taking the service courses offered by the Department of Psychology and Educational Sciences. Age of the students ranged from 18 to 30 with the mean of 22.1 (SD = 1.62). In fact, 22.1 is a relatively high mean age for the present sample but when it is considered that the service course offered by the Educational Sciences department is only eligible for 4th year students, the relatively high mean age of the sample is understandable.

3.2 Data Collection Instruments

In the present study, together with the Demographic Information Sheet, three instruments were administered to the students, namely, Physical Activity Assessment Questionnaire (PAAQ), Sense of Coherence Scale (SOC), and Positive-Negative Affect Schedule (PANAS) (see Appendix A, B, C, and D, respectively).

3.2.1 Demographic Information Sheet (DIS)

A demographic questionnaire was developed for the present study (App. A). In the questionnaire, information was gathered regarding gender, age, height, and weight. The questionnaire also included two closed questions concerning whether or not they have health problems which require continuous treatment and have physical disabilities.

3.2.2 Physical Activity Assessment Questionnaire (PAAQ)

Physical Activity Assessment Questionnaire (PAAQ) was originally developed by Karaca, Ergen, and Koruç (2000) to measure the physical activity level of both working people and the university students (Karaca, 2007) in Turkish population (App. B). PAAQ consists of 7 sub-scales of activities in which the individuals are expected to engage during a week. These sub-scales and the number of items included in each of these sub-scales are: work (4 items), school (4 items), hobbies (2 items), home (19 items), transportation (5 items), climbing stairs (1 item), and sports (11 items). Besides these, at the end of the questionnaire there is a sub-section named as *other* which asks participants whether they have any other activity to add. For each sub-scale the participants were asked to report the frequency and duration in the given activity they do engage. In the present study, scoring was done by using the syntax prepared by the test developer, Karaca (2000), to calculate the physical activity level of the individuals. Total scores were calculated for each participant using the formula given in the syntax. The higher the scores they obtain from the scale, the more physically active they are. The measurement unit for the

scale was MET/hour which means amount of MET per hour. MET stands for "metabolic equivalent" and defined as the energy expenditure for sitting quietly (Ainsworth et al., 1993).

3.2.2.1 Validity and Reliability Studies of PAAQ

The validity and reliability studies of PAAQ were conducted by Karaca, Ergen, and Koruç (2000). As for the concurrent validity, PAAQ was administered together with Physical Activity Diary (PAD) to 182 individuals who work in state institutions, 36 university students from 1st and 2nd grades of sports department, 70 individuals who work in different shopping centers and 46 individuals who work in the private sector. The correlation between the total score of PAAQ and PAD was reported as r = .72 in the total sample.

The results of the test-retest reliability coefficients were reported as changing between .36 and .73 among the subsections of the scale. Cronbach alpha reliability coefficients reported for the kcal/week calculations were as follows; .38 for work, .59 for transportation, .63 for stairs, .61 for house, .73 for sports, and .53 for the total score. As for the MET/hour calculations, the reliability coefficients were; .36 for work, .58 for transportation, .62 for stairs, .39 for house, .70 for sports, and .40 for the total score. For the present study, MET/hour calculations were used since the assessment of activity level (MET) rather than the calorie spent was the focus of the study.

3.2.2.2 Reliability of PAAQ for the Present Study

In the present study, the internal consistency coefficients calculated by Cronbach alpha formula for the subscales ranged from .41 to .73, job-related activities having the lowest reliability and the household activities having the highest reliability coefficients. Cronbach alpha coefficient for the total score was .78. These coefficients were similar to the results obtained in the reliability studies of the original scale.

3.2.3 Sense of Coherence Scale (SOC)

Sense of Coherence Scale (SOC) was originally developed by Antonovsky in 1987 to measure the individuals' ability to maintain healthy despite stress (as cited in Eriksson & Lindström, 2005). The first version of SOC is composed of 29-items with a 7-point Likert type scale. In this scale, eleven items refer to "comprehensibility", eight items refer to "meaningfulness", and ten items refer to "manageability" (Geyer, 1997). In 1987, Antonovsky himself revised and developed a shorter version of the SOC scale which is composed of 13 items (App. C). In this short version, five items measure the "comprehensibility", four items measure the "meaningfulness", and four items measure the "manageability" on a 7-point Likert type scale.

Although there are many studies interpreting their results in terms of high and low SOC scores, Antonovsky suggested the use of SOC as a continuous variable and therefore, never mentioned the level of a normal SOC (Eriksson & Lindström, 2005). The total score that can be obtained from SOC-13 changes between 13 and 91. Then the mean score is calculated for each participant. Hence the total scores participants can obtain ranges between 1 and 7. Higher total scores indicate higher sense of coherence.

3.2.3.1 Validity and Reliability Studies of SOC

Studies regarding the factor structure of SOC yielded one-factor solution rather than three for the SOC, leading some controversies over its multidimensionality (e.g., Frenz, Carey, & Jorgensen, 1993; Geyer, 1997). However, Eriksson and Lindström (2005), after examining 458 scientific publications and 13 doctoral theses stated that SOC scale has been translated into 33 languages including Turkish, and in 32 different countries including Western countries and countries like Thailand, China, Japan, and South Africa. Among the 127 studies which used SOC-13 version of the scale, the researchers reported the means of SOC-13 ranging from 35.39 (SD = 0.10) to 77.60 (SD = 13.80) for the total score. In the same study, they reported that the internal consistency of SOC-13 total score ranged from .70 to .92;

and the test-retest reliability of the SOC-13 total score ranged from .69 to .72 for one-year period. The researchers also reported that these findings are parallel to what Antonovsky had suggested about the SOC concept: SOC is stabilized by the end of the early adulthood and afterwards, it does not fluctuate significantly. Hence, Eriksson and Lindström concluded that SOC scale is a cross culturally applicable instrument and as it was shown in many studies, SOC has satisfactory face, consensual, construct, criterion and predictive validity.

SOC was translated into Turkish by Lajunen and his research team (unpublished manuscript) and this translation was used in the present study. Both explanatory and confirmatory analyses yielded a three-factor solution for the SOC-13 scale. For the reliability of the Turkish translation of the SOC-13 version, Lajunen reported reliability coefficient as .78 for the Turkish population. He also pointed out that, the relatively low reliability may be due to the low item number of the short version. Since Antonovsky himself proposed to use the total score and measure the SOC as a total construct rather than measuring the three sub-dimensions separately (as cited in Eriksson & Lindström, 2005), in the present study, total scores were calculated for each participant.

3.2.3.2 Reliability of SOC for the Present Study

In the present study, the corrected-item total correlation coefficients were found as ranging from .24 (item 11) to .51 (item 12). Internal consistency coefficient calculated by Cronbach alpha formula for the total score of SOC-13 was found as .77. It can be noted that this coefficient found in the present study was similar to the values reported in the previous studies.

3.2.4 Positive and Negative Affect Schedule (PANAS)

The Positive and Negative Affect Schedule (PANAS) was originally developed by Watson, Clark, and Tellegen (1988) with the claim that positive and negative affect are two dominant and relatively independent dimensions rather than

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being the opposites of each other. The authors indicated that these two mood factors while considered to be strongly negatively correlated at first glance emerged as highly distinctive categories.

As indicated in the original study, positive affect (PA) is an indicator of the extent to which a person feels enthusiastic, active, and alert. Hence, high PA is a state of high energy, full concentration and pleasurable engagement, and low PA is a state of sadness and lethargy. As being independent from the PA, negative affect (NA) is related to subjective distress that subsumes a variety of aversive mood states, including anger, contempt, disgust, guilt, fear, and nervousness. Low NA is a state of calmness and serenity.

PANAS was developed for the measurement of these two different constructs; namely, positive affect and negative affect. The scale is composed of two subscales; one is measuring the PA level and the second measuring the NA level. Each subscale is composed of ten mood-related adjectives. The positive affect mood adjectives are active, alert, attentive, determined, enthusiastic, excited, inspired, interested, proud, and strong. The negative affect mood adjectives include afraid, ashamed, distressed, guilty, hostile, irritable, jittery, nervous, scared, and upset. The participants were asked to report to what extent they were feeling as indicated in the item for the last two weeks. It is a 5-point Likert scale in which 1 = very slightly or not at all, 2 = a little, 3 = moderately, 4 = quite a bit, 5 = extremely. The high scores in each dimension reflect the experience of affect while the low scores represent the lack of that feeling. For both PA and NA the maximum score one can obtain is 50, while the minimum is 10.

3.2.4.1 Validity and Reliability Studies of PANAS

Watson, Clark and Tellegen (1988) stated that PA and NA together, accounted for the 68.7 % of the total variance in general ratings. Convergent and discriminant correlations were reported as .89 to .95; and -.02 to -.18 for PA and NA

respectively. For the item validity, it was revealed that all of the descriptors of the two factor; PA and NA, have strong primary loadings (.50 and above) on the appropriate factor, and the secondary loadings were all acceptably low. In the same study, internal consistency reliabilities were found as .88 and .87 and test-retest reliabilities were found as .68 and .71 for PA and NA, respectively when general time frame is used as a time instruction. Similar to the original study's findings, Crawford and Henry (2004), stated that the scale has high reliability (Cronbach's alpha = .89 and .85, for PA and NA, respectively) and ha evidence for construct validity.

The reliability and validity studies of PANAS were conducted by Gençöz (2000). Factor loadings for NA and PA were reported as changing between .46 - .76 and .48 - .74, respectively and these two factors explained the 44 % of the total variance. Gençöz reported the internal consistency for PA and NA as .86 and .83; test-retest reliability as .54 and .40, respectively.

3.2.4.2 Reliability of PANAS for the Present Study

In the present study, the corrected-item total correlation coefficients ranged from .36 (item 3) to .66 (item 19) for PA scale; and from .39 (item 13) to .62 (item 18) for NA scale. Internal consistency coefficients calculated by Cronbach alpha formula for PA and NA scales were found as .83 and .83, respectively.

3.3 Procedure

The data were collected in the classroom settings. Procedure was that, all these three scales together with the demographic information sheet were brought together to create one package of questionnaire. Then these questionnaires were given in the service courses of Psychology Department, namely, "PSY 100 – Introduction to Psychology" and "PSY 150 – Understanding Social Behaviour", and the service course of Educational Sciences Department, "EDS 424 - Guidance" in

which there were many students from different grades and different departments. At the beginning of the questionnaire, there was a detailed cover letter stating the purpose of the study, what the students were expected to do and the promise of confidentiality. Apart from the cover letter, an oral explanation was also done at the beginning of the administration. This explanation and administration was done by the researcher herself. Before administering the questionnaires, an informed consent form was also given to each student and those who volunteered to participate filled out the forms during the class hours designated by the instructors. The administration of the scales took approximately 30 minutes.

3.4 Data Analysis

Two separate stepwise multiple linear regression analysis was conducted to examine whether physical activity and the sense of coherence predict positive affect and negative affect. Independent variables were sense of coherence (continuous variable), physical activity (continuous variable) and gender (dichotomous variable with dummy coded categories; 0= female, 1= male). First, physical activity, sense of coherence, gender and the variance they explained in the positive affect was examined. Second, physical activity, sense of coherence, gender and the variance they explained in the negative affect was examined. Through the stepwise multiple regression analysis, both the total variance explained by the independent variables and the variance each independent variable explained separately were observed. The statistical analyses were carried out by using subprograms of SPSS, version 15.0.

3.5 Limitations

The first limitation of the study is that, since convenience sampling was used instead of random sampling, generalizability of the study is limited. A second limitation is related to self-report nature of the three measurements making the information acquired is questionable in terms of validity. A third limitation is that,

since this is not a longitudinal design, no attempt to state cause-effect relationship can be done.

CHAPTER IV

RESULTS

This chapter includes four major sections. In the first section, preliminary analyses of the data are explained in detail. In the second section, descriptive statistics of the study variables are displayed. In the third section, correlations among the variables are presented. And in the fourth section, the results of the stepwise multiple linear regression analyses are reported.

4.1 Preliminary Analyses

In accordance with the principles stated by Tabachnick and Fidell (1996), before conducting the main analyses, all the major variables were checked for missing data and for the scores that were out-of-range. For the PAAQ scores, a sports expert who is also the developer of PAAQ examined the scores and identified 8 respondents who gave inflated answers to the questionnaire. These cases were excluded from the sample. Then, the missing values were replaced by a series mean scores since the percentage of missing values was not greater than 5%. Crucial assumptions were also checked out for stepwise multiple linear regression analyses. First dummy coding for the categorical variable of gender was done. After cleaning the univariate outliers and replacing the missing values, the data were checked for multivariate outliers. This was done by examining the Mahalanobis distance for each subject. As stated by Tabachnick and Fidell (1996), Mahalanobis distance should not exceed the critical chi-squared value with degrees of freedom equal to the number of predictors and alpha level = .001. Hence, in the present study, Mahalanobis distance was taken into consideration with $p < .001$ and $\chi^2 = 16.27$ (Pallant, 2001). As a result, three participants whose Mahalanobis distance values were higher than 16.27 and one participant who reported physical disability in demographic questionnaire were

excluded from the sample. Thus, the analyses were carried out with 364 (164 female, 199 male and 1 missing values of gender) students. The mean age of the participants was 22.1, with a standard deviation of 1.63.

4.2 Descriptive Statistics of the Variables

The means and standard deviations of PAAQ, SOC, and PANAS scores of female and male students are presented in Table 4.1.

Table 4.1.

Means and Standard Deviations of the Variables by Gender

Variables	Female		Male		Total	
	M	*SD*	*M*	*SD*	*M*	*SD*
PAAQ	1.6	0.15	1.6	0.20	1.6	0.18
SOC	4.4	0.81	4.3	0.77	4.4	0.79
PA	32.4	6.80	32.6	6.71	32.5	6.72
NA	21.0	6.74	21.6	6.61	21.3	6.67

Note. PAAQ: Physical Activity Assessment Questionnaire; SOC: Sense of Coherence Scale; PA: Positive Affect; NA: Negative Affect.

As can be seen from Table 4.1, the mean scores of PAAQ, SOC, PA and NA were 1.6, 4.4, 32.4 and 21.0 for females and 1.6, 4.3, 32.6 and 21.6 for males. The mean scores for the total sample were 1.6, 4.4, 32.5, and 21.3, with the standard deviations of 0.18, 0.79, 6.72, and 6.67, respectively.

To explain these findings shortly, it can be stated that 1.6 MET/ hour is neither low, nor high. It is an average activity level (Haskell et al., 2007) indicating that the current sample has an average physical activity level.

SOC means can be interpreted as above average when it is considered that the mean values may change between 1 and 7 and 4.4 seems to be an above average SOC score (Morrison & Clift, 2006).

For PA and NA, it had been mentioned that min 10 and max 50 could be obtained for each subscale and the sample seems to have above average PA level and below average NA level.

4.3 Correlation Matrix of the Study Variables

The results of the correlations among the variables of gender, PAAQ, SOC, PA and NA scores for the total sample of the study are presented in Table 4.2.

Table 4.2.

Correlations among Independent variables (gender, sense of coherence, physical activity) and Dependent variables (positive affect, negative affect) in the Total Sample

	1	2	3	4	5
1. Gender	1				
2. PAAQ	.21*	1			
3. SOC	-.03	.13*	1		
4. PA	.02	.26**	.29**	1	
5. NA	.05	-.04	-.54**	-.21*	1

* p < .05, *two tailed* ** p < .01, *two tailed*

Note. PAAQ: Physical Activity Assessment Questionnaire; SOC: Sense of Coherence Scale; PA: Positive Affect; NA: Negative Affect

As seen in Table 4.2, correlation coefficients among the variables changed between -.54 and .29 in the total sample. The highest negative correlation was observed between sense of coherence and negative affect. The highest positive correlation was observed between sense of coherence and positive affect.

The correlations of independent and dependent variables for females (lower triangle) and males (upper triangle) are presented in Table 4.3.

Table 4.3.

Correlations among Variables for Females (Lower Triangle) and Males (Upper Triangle)

	1	2	3	4
1. PAAQ		.18*	.24**	-.07
2. SOC	.07		.29**	-.58**
3. PA	.30**	.29**		-.26**
4. NA	-.02	-.50**	-.13	

*p< .05, two tailed; **p< .01, two tailed; n = 164 for females, n = 199 for males.

Note. PAAQ: Physical Activity Assessment Questionnaire; SOC: Sense of Coherence Scale; PA: Positive Affect; NA: Negative Affect

As seen in Table 4.3, the correlations changed between -.50 and .30 for females; -.58 and .29 for males. For females, the highest negative correlation was between sense of coherence and negative affect; and the highest positive correlation was between total physical activity level and positive affect. For males, the highest negative correlation was between sense of coherence and negative affect; and the highest positive correlation was between sense of coherence and positive affect.

4.4 Results of Stepwise Multiple Linear Regression Analyses

Before conducting the analyses, assumptions of the stepwise multiple linear regressions were checked. First, sample size was controlled in accordance with the rule stated by Tabachnick and Fidell (1996, p. 132). The given rule was that $N \geq 50 + 8m$ where m is the number of independent variables which would equal 74 for the

present study and the sample size was 364 after all the outliers were cleaned which is quite sufficient to run the regression analyses. Then the data were checked for normality, linearity, homoscedasticity and independence of residuals. In order to check for normality descriptive statistics including mean, standard deviation, skewness, kurtosis, histograms and Q-Q plots were obtained. Then it was safely assumed that the dependent variables which were positive and negative affect were distributed normally in the population. All the other assumptions were checked and assumed after examining the residual scatterplot and the normal probability plot of the regression standardized residuals (Pallant, 2001). Additionally, the data were checked for multicollinearity, which is defined as very high correlations among the predictor variables where $r = .90$ or above (Tabachnick & Fidell, 1996). No such intercorrelation was observed in the data.

In the present study, two separate stepwise multiple regression analyses were conducted to predict the effect of independent variables (gender, sense of coherence and total physical activity level) on two separate components of affect (positive affect and negative affect). Results of each regression analysis are presented separately in the following sections.

4.4.1 Results Concerning the Predictors of Positive Affect

A stepwise multiple linear regression analysis was conducted to examine how well the independent variables (gender, sense of coherence and physical activity level) predict the dependent variable of positive affect. Table 4.4 presents the summary of findings.

Table 4.4.

R and R square Change Predicting the Positive Affect Scores

Variables	Multiple R	R Square	Adjusted R Square	R Square Change	F	df1	df2	p
SOC	.291	.085	.082	.085	31.77	1	343	.000
PAAQ	.367	.134	.129	.050	19.59	1	342	.000

Note: SOC: Sense of Coherence; PAAQ: Physical Activity Assessment Questionnaire

As can be seen from Table 4.4, the regression equation related to the sense of coherence was significant, $R^2 = .09$, $F(1,343) = 31.77$, $p < .001$. This variable alone accounted for approximately 8% of the variance. Physical activity, being the second variable entered into the equation, was also significant with the values of $R^2 = .13$, $F(1,342) = 19.593$, $p < .001$. This variable alone accounted for an additional 5% of the variance. In the analyses of Beta values, it was seen that the sense of coherence and total physical activity level significantly and positively predicted the positive affect with Beta values of $\beta = .263$, $p < .001$ and $\beta = .224$, $p < .001$, respectively.

In sum, sense of coherence and total physical activity positively predicted the positive affect among the university students. Together they explained 13% of the variance in positive affect. Gender did not make a significant contribution to the explanation of variance in the positive affect.

4.4.2 Results Concerning the Predictors of Negative Affect

A second stepwise multiple linear regression analysis was conducted to examine how well the independent variables (gender, sense of coherence and total

physical activity level) predict the second dependent variable of the negative affect. Table 4.5 presents the summary of findings.

Table 4.5.

R and R square Change Predicting the Negative Affect Scores

Variables	Multiple R	R Square	Adjusted R Square	R Square Change	F	*df1*	*df2*	*p*
SOC	.541	.292	.290	.292	141.70	1	343	.000

Note: SOC: Sense of Coherence

As can be seen from Table 4.5, the regression equation with the sense of coherence was significant, $R^2 = .29$, $F(1,343) = 141.70$, $p < .001$. This variable alone accounted for approximately 29% of the variance. In the analyses of Beta values, it was seen that the sense of coherence significantly and negatively predicted the negative affect with Beta value of $\beta = -.541$, $p < .001$.

In sum, sense of coherence negatively predicted the negative affect among the university students. It alone explained 29% of the variance in negative affect. Neither physical activity nor gender made a significant contribution to the explanation of variance in the negative affect.

CHAPTER V

DISCUSSION

In this chapter, discussion regarding the findings obtained from the statistical analyses is presented. The first section includes the discussion of the predictors of positive and negative affect, respectively. In the second section, the implications of the present study and recommendations for future research are presented.

5.1 Discussion of the Results

The purpose of this study was to find out the predictive power of gender, sense of coherence and physical activity in explaining the positive and negative affect. Two separate stepwise multiple linear regression analyses were conducted for each dependent variable; namely, positive affect and negative affect. Hence, the results for the each dependent variable are separately discussed in the following sections.

5.1.1 Discussion Regarding the Predictors of Positive Affect

The results of the stepwise multiple linear regression analysis indicated that, both sense of coherence and physical activity were found to be significant predictors of positive affect. These two independent variables explained approximately 13% of total variance in positive affect of university students. When taken alone, sense of coherence accounted for 8% of the variance and physical activity accounted for an additional 5% of the variance in positive affect. In the analyses of β values, it was seen that both sense of coherence and total physical activity significantly and positively predicted the positive affect ($\beta = .263$, $p < .001$ and $\beta = .224$, $p < .001$, respectively). Gender did not make a significant contribution to the explanation of variance in the positive affect.

The finding of the present study regarding the effect of sense of coherence in positive affect is supported by the results of most of the research in the literature. Although most of the research in the literature focuses on the relationship between sense of coherence and variables which mainly constitutes negative affect such as demoralization, helplessness, anxiety, depression, post-traumatic stress and coping with severe illnesses (Eriksson, Lindström, & Lilja, 2007), researcher (Strümpfer, Gouws, & Viviers, 1998) generally concluded that sense of coherence is related to positive affect although not as much as negative affect.

Another finding of the present study yielding that physical activity significantly and positively predicts the positive affect is also consistent with the current literature. For example, Bartholomew et al. (2004) found that single bout of exercise was increasing positive affect among the old Mexican American women but does not decrease negative affect. Similarly, it was reported in one study (Watson, 1988) that social activity and exercise were more strongly related to positive affect whereas perceived stress was highly related to negative affect in normal population. Another study (Steinberg et al., 1998) examining the successive and long-term effects of exercise in negative and positive feelings indicated that exercise significantly increased positive feelings and decreased negative feelings in successive weeks. Researchers concluded that exercise seemed to have a much greater effect on positive rather than on negative moods.

5.1.2 Discussion Regarding the Predictors of Negative Affect

The results of stepwise multiple linear regression analysis indicated that sense of coherence was a significant predictor of negative affect. When taken alone, sense of coherence explained approximately 29% of total variance of negative affect of university students. In the analyses of β values, it was seen that sense of coherence significantly and negatively predicted the negative affect ($\beta = -.541$, p < .001). Neither total physical activity nor gender made a significant contribution to the explanation of variance in the negative affect.

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This result of the present study is supported by most of the studies in the literature, indicating that sense of coherence predicts negative affect even more than it predicts positive affect (Strümpfer et al., 1988) and that there is a high correlation between sense of coherence and negative affect found (Kravetz, Drory, & Florian, 1993). When the literature on sense of coherence is examined, it can be argued that this finding is not surprising since sense of coherence is found to be significant in mediating the effects of stress, chronic illnesses and disabilities (Eriksson, Lindström, & Lilja, 2007) which are mainly related to negative affect rather than positive affect.

The finding that physical activity does not have a significant predictive role in negative affect might be regarded as surprising since the literature is well documented concerning its effects on negative affect related variables. To explain, many researchers pointed out that exercise is effective in reducing anxiety, depression, stress, and regulating mood-affect (Singer et al., 2001). Although depression, stress and anxiety are all negative affect related variables, in the present study there was no significant relationship between physical activity and negative affect. One possible explanation is that, in the present study, physical activity measures were used rather than the mere exercise indexes which may result in the difference with the literature. Still, a further explanation might also be made that, as Hassmen et al. (2000) reported, exercise may be more related to the mood improvement in clinically depressed people than normal people. Similarly, Watson (1988) reported that social activity and exercise were more strongly related to positive affect, whereas perceived stress was highly related to negative affect in normal population. Therefore, it can be concluded that the antidepressant effect of exercise depends on the population and the presence or absence of depression. A possible explanation is that, in the studies searching for the antidepressant effect of exercise, exercise is usually used as a supplement to different therapies, specifically the cognitive interventions. For example; in a recent review (Donaghy, 2007), it was reported that exercise was used as an adjunct to therapy. Hence, the healing

mechanism may well be that through the cognitive intervention the negative affect is reduced and through the addition of the exercise to the treatment positive affect is increased together resulting in an improved mood state. In fact, this was precisely what the present study found: sense of coherence as a cognitive variable mainly reduces the negative affect and physical activity is effective in increasing the positive affect together elevating the affect states of individuals in the normal population.

The finding that gender did not predict either positive or negative affect also seems consistent with the literature since, to our knowledge, there is no article indicating statistically significant gender main effect both in positive and negative affect.

5.2 Implications of the Findings and Recommendations for Future Research

It is well stated in the literature that university students all around the world are spending most of their time by studying and they are not physically active enough (Butler et al., 2004; Huang et al., 2003; Irwin, 2004; Racette et al., 2004). Thus, it can be concluded that the university students are in need of guidance to increase their physical activities to regulate their emotions especially to increase their positive affect which is operationally defined by Watson, Clark, and Tellegen (1988) as being active, alert, attentive, determined, enthusiastic, excited, inspired, interested, proud and strong. Considering that the present study emphasize not only the exercise but the total physical activity, the students can be informed about the role of being physically active in regulating their emotions. Hence they can be encouraged not only to do sports, but also to increase their daily physical activity level in all areas of life.

Another implication of the study is that if sense of coherence is a personality construct that can be *learned*, as stated by today's authors (Lindström & Eriksson, 2006; Morrison & Clift, 2006), then especially the university counselors might have a vital mission to do their best to increase the sense of coherence of university students since university years constitute the most important period for the

development of sense of coherence (Antonovsky & Sagy, 1986). Counselors can develop some workshops and training programs for promoting the sense of coherence of university students.

For future research, it is recommended that there should be more empirical studies conducted with total physical activity indexes rather than mere exercise/sports indexes. The reason for this recommendation is that, literature mainly focuses on the effects of exercise/sports behavior on mental health. But the effects of exercise seem to change depending on the operational definition of it. In other words, some studies are searching for the effects of single bout of exercise while the others are searching for more longitudinal designs and long-term effects. What is more, different type of exercises require different amount of energy and have different degrees of strain which affects the findings of the studies. That may be the reason why literature sometimes conveys conflicting results about the effects of exercise. With the use of total physical activity indexes, a common definition of physical activity may be attained which would make the communication of the researchers easier and result in a more consistent findings. Besides, in one very recent empirical study (Nguyen-Michel et al., 2006) conducted with university students it was found that sports as a leisure activity was not enough to explain the perceived stress. The authors argued that total physical activity indexes which include work, school, transportation and house related activities together with exercise behavior should be used to explain the complex relationship between physical activity and mental health.

A second recommendation is that future studies could use PANAS (Positive and Negative Affect Schedule) more often rather than POMS (Profile of Mood States) for counseling purposes. To explain, many of the studies in the literature tend to measure affect with POMS. However, POMS is developed for the assessment of mood and feeling states of *psychiatric outpatients* (Norcross, Guadagnoli, & Prochaska, 1984) which predominantly measures negative affect with the factors of anxiety, depression, and anger, lack of vigor, fatigue, and confusion while neglecting the positive affect. Since, as counselors, we are supposed to work with normal

population, PANAS may be more suitable for our population. As counselors, we need to put equal emphasize on increased positive affect together with decreased negative affect which is more related to mental diseases such as depression and anxiety, since WHO (World Health Organization) defines health not only as the absence of disease but also as a state of complete physical, mental, social, and spiritual well-being (Eriksson & Lindström, 2007).

A third recommendation is that future studies should continue to study physical activity together with some salutogenic personality constructs such as sense of coherence since daily stress-mental health relationship seems complex and none of these variables is able to explain the whole phenomena alone although personality constructs seems more powerful than the physical activity level in explaining mental health.

Another recommendation is that future studies should be conducted with random sampling rather than convenience sampling as it was the case in the present study so that the findings might be generalized to the populations. It is also recommended that the future studies should include more longitudinal designs so that cause-effect relations can be explored more between these variables. As a last recommendation, future studies should take some objective measurements other than self report so that the information acquired might be less questionable but more valid.

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APPENDICES

APPENDIX A

DEMOGRAPHIC INFORMATION SHEET (in Turkish)

Sayın Katılımcı,

Bu anket, fiziksel hareketlilik düzeyi ve genel duygu durumu arasındaki ilişkiyi incelemek amacıyla yürütülen bir tez çalışması için hazırlanmıştır. Ankette, sizin yaşamınızda genel olarak fiziksel etkinliklere ne ölçüde yer verdiğinizi ve yaşadığınız farklı duygu durumlarınızı yansıtmanızı sağlayacak sorular bulunmaktadır.

Anketi doldurmaya başlamadan önce lütfen her soru grubunun başındaki açıklamaları dikkatle okuyunuz ve soruları açıklamalara uygun biçimde cevaplayınız. Soruların doğru veya yanlış cevabı yoktur. Önemli olan sizi en iyi tanımlayan cevabı vermenizdir. Verdiğiniz cevaplar çalışmanın amacına ulaşması açısından büyük önem taşımaktadır. Bu nedenle, lütfen soruları mümkün olduğunca içtenlikle cevaplandırınız ve hiçbir soruyu boş bırakmayınız.

Anketi doldurmak yaklaşık olarak 30 dakikanızı alacaktır. Katılım gönüllülük esasına dayanmaktadır. Katılmamayı seçmeniz veya katılımdan vazgeçmeniz mümkündür.

Ankete verdiğiniz cevaplar kesinlikle gizli tutulacak ve bu cevaplar yalnız araştırma amacıyla kullanılacaktır.

Değerli katkılarınızdan dolayı teşekkür ederiz.

Psk. Ceyda ÖZTEKİN

ORTA DOĞU TEKNİK ÜNİVERSİTESİ, ANKARA

1. Cinsiyetiniz: K ( )   E ( )

2. Yaşınız:_____

3. Boyunuz: _____
4. Kilonuz:_____
5. Bedensel bir engeliniz var mı?   Evet ( )   Hayır ( )

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APPENDIX B

PHYSICAL ACTIVITY ASSESSMENT QUESTIONNAIRE – PAAQ (in Turkish)

Bu anketin amacı, bireylerin fiziksel aktivite düzeylerinin saptanmasıdır. Fiziksel atkivite hergün farklılık gösterebilir. Bu nedenle sorulara cevap verirken **"GENEL OLARAK NE KADAR"** sorusuna cevap aramanız yeterli olacaktır. **Haftada en az 1 kez** olmak üzere, **düzenli** olarak yapmakta olduğunuz aktiviteleri ve bu aktiviteleri **ne zamandan beri** yaptığınızı belirtmeniz, fiziksel aktivite alışkanlığınızı belirlememizi sağlayacaktır.

İŞ İLE İLGİLİ AKTİVİTELER (Eğer herhangi bir işte çalışmıyorsanız bu bölümü doldurmayınız)

1-İşiniz: ....

2-Haftada kaç gün çalışıyorsunuz?   ....gün

3-Günde kaç saat çalışıyorsunuz?   ....saat

4-Günlük çalışma sürenizin kaç saatinde oturuyorsunuz?
(Çalışırken ve dinlenirken oturulan süreler toplanarak yazılacak) .... saat   Hiç oturmuyorum ( )

*Eğer iş saatlerinizi 2, 3 ve 4. sorularda tanımlayamıyorsanız detaylı olarak açıklayınız.

....

OKUL İLE İLGİLİ AKTİVİTELER

	Kaçıncı yılınız?
5-Hangi bölümde okuyorsunuz?	1 2 3 4 5 6 7 8
6-Haftada kaç gün okula/bölüme gidiyorsunuz?	.... gün

7-Günde kaç saat okula/bölüme gidiyorsunuz? .... saat

8- 1 günde okulda bulunduğunuz süre içinde kaç saat
oturuyorsunuz?   (Ders ve dinlenirken oturulan süreler .... saat   Hiç oturmuyorum ( )
toplanarak yazılacak)

*Eğer okul saatlerinizi 6, 7 ve 8. sorularda tanımlayamıyorsanız detaylı olarak açıklayınız.

....

ULAŞIM İLE İLGİLİ AKTİVİTELER

**Bu bölümde iş, ev, okul, alışveriş vb. yerlere ulaşım şeklinizi belirtirken gidiş –
dönüş toplamınızı yazınız.**

9- Ulaşım şekli	Haftada kaç gün	Günde kaç dakika	Kaç aydan beri
Yürüyerek	....	....	....
Araba kullanarak	....	....	....
Oturarak	....	....	....
Ayakta	....	....	....
Diğer (belirtiniz)	....	....	....

MERDİVEN ÇIKMA

1 kat merdiven = 20 basamak

**Örneğin, 5. katta oturuyor ve günde iki kez çıkıyorsunuz (5 kat X 2 kez) 1 günde 10 kat
merdiven çıkıyorsunuz anlamına gelmektedir. Not: Sadece çıktığınız kat sayısını yazınız
(indiğinizi yazmayınız).**

10- Bir günde kaç kat merdiven çıkıyorsunuz? .... kat.

HOBİ OLARAK YAPILAN AKTİVİTELER

Evde ya da ev dışında düzenli olarak haftada en az bir kez yaptığınız hobileriniz ile ilgili sorulara cevap verirken hafta içi kaç gün ve 1 günde kaç dakika, hafta sonu kaç gün ve bir günde kaç dakika olduğunu belirtiniz.

Hobileriniz	HAFTA İÇİ		HAFTA SONU	
	Hafta içi kaç gün	Günde kaç dakika	Hafta sonu kaç gün	Günde kaç dakika
Resim yapmak	....	....	....	....
Müzik aleti çalmak	....	....	....	....
Diğer (belirtiniz)	....	....	....	....

EVDE GEÇİRİLEN ZAMAN İÇERİSİNDEKİ AKTİVİTELER

Uyku

11- Hafta içi bir günde kaç saat uyuyorsunuz?   .... saat

   Hafta sonu bir günde kaç saat uyuyorsunuz?   .... saat

12- Evde, uyku dışında geçirdiğiniz süre içinde yaptığınız ev işlerini, hafta içi kaç gün ve 1 günde kaç dakika, hafta sonu kaç gün ve 1 günde kaç dakika yaptığınızı belirtin.

Ev İşleri	HAFTA İÇİ		HAFTASONU	
	Hafta içi kaç gün	Günde kaç dakika	Hafta sonu kaç gün	Günde kaç dakika
Temizlik yapma	....	....	....	....
Yemek yapma, masa hazırlama ve toplama	....	....	....	....
Bulaşık (makineye dizme ve çıkartma veya elde yıkama)	....	....	....	....
Çamaşır (makineye koyma, çıkarıp asma ve katlama)	....	....	....	....
Ütü yapma	....	....	....	....
Alışveriş	....	....	....	....
Çocuk bakımı	....	....	....	....
Tamirat	....	....	....	....
Diğer (Belirtiniz):	....	....	....	....
Diğer (Belirtiniz):	....	....	....	....
13- Evde oturarak yapılan aktiviteler				
Ders çalışma	....	....	....	....
Bilgisayar kullanma	....	....	....	....
Kitap okuma v.b.	....	....	....	....
Televizyon izleme	....	....	....	....
Diğer (Belirtiniz):	....	....	....	....

SPOR AKTİVİTELERİ

Halen düzenli olarak haftada en az bir kere yaptığınız spor aktivitelerini haftada kaç gün, günde kaç dakika, kaç aydan beri yaptığınızı yazınız ve zorlanma düzeyinizi işeratleyiniz.

Spor Dalı	Haftada kaç gün	Günde kaç dakika	Kaç aydan beri	Zorlanma Düzeyi				
				Hiç	Az	Orta	Çok	Çok fazla
Yürüyüş	....	....	....	( )	( )	( )	( )	( )
Koşu	....	....	....	( )	( )	( )	( )	( )
Bisiklet	....	....	....	( )	( )	( )	( )	( )
Aerobik – Step	....	....	....	( )	( )	( )	( )	( )
Futbol	....	....	....	( )	( )	( )	( )	( )
Tenis	....	....	....	( )	( )	( )	( )	( )
Masa tenisi	....	....	....	( )	( )	( )	( )	( )
Diğer (...................)	....	....	....	( )	( )	( )	( )	( )
Diğer (...................)	....	....	....	( )	( )	( )	( )	( )
Diğer (...................)	....	....	....	( )	( )	( )	( )	( )

| Diğer
(...................) | .... | .... | .... | ( ) | ( ) | ( ) | ( ) | ( ) |

DİĞER AKTİVİTELER

Bu bölümde, düzenli olarak haftada en az bir kez yaptığınız ve herhangi bir bölümde belirtmediğiniz fiziksel aktivite düzeyinizin belirlenmesinde sonucu etkileyecek aktivitelerinizi yazınız.

		HAFTA İÇİ		HAFTA SONU	
		Hafta içi kaç gün	Günde kaç dakika	Hafta sonu kaç gün	Günde kaç dakika
Diğer	(belirtiniz):	....	....	....	....
....					
Diğer (belirtiniz):		....	....	....	....

APPENDIX C

SENSE OF COHERENCE SCALE – SOC (in Turkish)

Aşağıda hayatınızın belirli alanlarına ilişkin sorular sıralanmıştır. Soruların seçeneklerindeki 1 ve 7 rakamları cevabın iki uç noktasını belirlemektedir. Cevabınızı, duygunuzu en iyi yansıtan rakamı daire içine alarak belirtiniz.

1.Çevrenizde olup bitenle ilgilenmediğiniz duygusunu taşıyor musunuz?

1	2	3	4	5	6	7

çok nadiren veya   çok sık

hiçbir zaman

2. Geçmişte, iyi tanıdığınızı zannettiğiniz insanların davranışlarına şaşırdığınız oldu mu?

1	2	3	4	5	6	7

hiç bir zaman   hep oldu

olmadı

3. Güvendiğiniz insanların sizi hayal kırıklığına uğrattığı oldu mu?

1	2	3	4	5	6	7

hiç bir zaman   hep oldu

olmadı

4. Şimdiye kadar hayatınızın

1	2	3	4	5	6	7

belirgin hedefleri,   belirgin hedefleri,

amacı olmadı   amacı oldu

5. Haksızlığa uğradığınız duygusunu taşıyor musunuz?

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

çok sık   pek nadiren veya

hiçbir zaman

6. Alışık olmadığınız bir durumda olup ne yapacağınızı bilmediğiniz duygusunu taşıyor musunuz?

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

çok sık   pek nadiren
veya
hiçbir
zaman

7. Her gün yaptığınız işleri yapmak

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

derin bir zevk   acı ve sıkıntı

ve tatmin kaynağı   kaynağı

8. Çok karmaşık duygularınız ve fikirleriniz var mı?

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

çok sık   pek nadiren
veya
hiçbir zaman

9. Hissetmemeyi tercih ettiğiniz duygulara sahip olduğunuz olur mu?

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

çok sık   pek nadiren
veya
hiçbir zaman

10. Birçok insan, kuvvetli karakterli olanlar bile, bazen belli durumlarda başarısızlık hissi duyarlar. Geçmişte siz ne sıklıkta böyle hissettiniz?

1	2	3	4	5	6	7

hiçbir zaman   çok sık

11. Bir şey olduğunda, genelde

1	2	3	4	5	6	7

önemini abarttığınızı veya   olaylara gereken
küçümsediğinizi   önemi atfedersiniz
fark edersiniz

12. Gündelik hayatta yaptığınız şeylerin nispeten anlamsız olduğunu ne sıklıkta hissedersiniz?

1	2	3	4	5	6	7

  çok sık   pek nadiren
                                                                                  veya
                                                           hiçbir zaman

13. Ne sıklıkta kontrol edebileceğinizden emin olmadığınız duygularınız olur?

1	2	3	4	5	6	7

çok sık   pek nadiren
                                                                                                          veya
                                                                                                          hiçbir zaman

APPENDIX D

POSITIVE and NEGATIVE AFFECT SCHEDULE- PANAS (in Turkish)

Bu ölçek farklı duyguları tanımlayan bir takım sözcükler içermektedir. **SON İKİ HAFTA** genelinde nasıl hissettiğinizi düşünüp her maddeyi okuyun ve sizin duygunuzu en iyi ifade eden rakamı işaretleyin. Rakamların anlamı en üstte ifade edildiği gibidir:

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