MJSS

Akdeniz Spor Bilimleri Dergisi

Mediterranean Journal of Sport Science

ISSN 2667-5463

# The Relationship of Leisure Boredom, Uncontrolled Eating and Life Satisfaction in Recreational Runners

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DOI: https://doi.org/10.38021asbid.1301618

**ORIGINAL ARTICLE**

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Received:
16.02.2023

Accepted:
19.06.2023

Online Publishing:
29.10.2023

**Abstract**

The aim of this study was to presented leisure behaviors of Turkish recreational runners by examining the relationship between uncontrolled eating, leisure boredom and life satisfaction. Respondents (N= 253) were selected from recreational running activities organized in some non-governmental organizations and social groups. The results proved boredom in leisure had negative, direct effects on uncontrolled eating and life satisfaction. In contrast, uncontrolled eating was not found to be associated with life satisfaction, and no indirect effect was found in the model. Finally, the model results as to respondents' gender presented there were no significant direct effects on leisure boredom, uncontrolled eating, and life satisfaction. All these results revealed that there might be an important relationship between bored in leisure, eating habits and life satisfaction, and demonstrated that the psychosocial effects of recreational running could be better understood with such studies in the fields of health and psychology.

***Keywords:*** Leisure Boredom, Life Satisfaction, Uncontrolled Eating, Recreational Runner, Structural Equation Modelling.

# Rekreasyonel Koşuculardaki Serbest Zamanda Sıkılma, Kontrolsüz Yeme ve Yaşam Doyumu İlişkisi

**Öz**

Bu çalışmanın amacı, kontrolsüz yemek yeme, serbest zamanda sıkılma ve yaşam doyumu arasındaki ilişki inceleyerek Türk rekreasyonel koşucuların serbest zaman davranışlarını ortaya koymaktır. Katılımcılar (N= 253) bazı sivil toplum kuruluşlar ve sosyal gruplar aracılığı ile düzenlenen rekreasyonel koşu aktivitelerine katılan kişilerden seçilmiştir. Araştırma sonuçları, serbest zamanlardaki can sıkıntısının kontrolsüz yemek yeme ve yaşam doyumu üzerinde olumsuz yönde doğrudan etkilediğini ortaya koymuştur. Buna karşılık, kontrolsüz yemek yemenin yaşam doyumu üzerinde etkisinin olmadığı ve modelde dolaylı bir etki de yaratmadığı belirlenmiştir. Son olarak, katılımcıların cinsiyetine göre sunulan model sonuçlarında serbest zamanda can sıkıntısının, kontrolsüz yemek yeme ve yaşam doyumu üzerinde doğru anlamlı bir etki yaratmadığı gözlemlenmiştir. Tüm bu sonuçlar, sıkılma hissiyle yemek yeme alışkanlığı ve yaşam doyumu arasında önemli bir ilişkinin olabileceğini ortaya koyarken, sağlık ve psikoloji alanlarında yapılan bu tür çalışmalar ile rekreasyonel koşunun psikososyal etkilerinin daha iyi anlaşılabileceğini de göstermiştir.

***Anahtar kelimeler:*** Kontrolsüz Yemek Yeme, Rekreasyonel Koşucu, Serbest Zamanda Sıkılma, Yaşam Doyumu, Yapısal Eşitlik Modeli.

## Introduction

Research on recreational runners have demonstrated that the most common reason for people's initiating running is to improve physical health, psychological well-being, and goal achievement (Callens, 1983). Carmack and Martens (1979) stated that it is reasons for staying involved in running include maintaining fitness, enjoyment, competition, weight control and feeling better. However, some people may find this activity tedious, and even professional athlete can get bored with running (Velasco and Jorda, 2020). Some people enjoy the solitary nature of a slow five-kilometer run (Sutton, 2016), while others fear the monotony and count their steps until the end of the run, needing to control themselves to continue when boredom sets in (Wolff et al., 2021). Researchers therefore identified boredom as an experience that may play an important role in most leisure activities (Bösselman et al., 2021; Deck et al., 2020; McCurdy et al., 2022). For instance, Hirsch et al. (2021) found that boredom was a common barrier for aerobic endurance training, whereas Morris et al. (2003) suggested that sport and physical activity can reduce boredom. This proves that boredom has a multi-faceted role to play in the context of leisure physical activity.

The conditions under which boredom is more likely to occur in an activity have been clarified by research. For example, Pekrun et al. (2010) reported that boredom could occurs if an activity is too easy (e.g., intensity of the run) or too difficult (e.g., trying to dunk a basketball when it is obvious that you cannot jump high enough to do so). In addition, people could find some recreational activities boring because of not providing reward or feedback (Wolff et al., 2021). Lastly some authors have explained perception of being void of meaning as the reason for boredom in an activity (van Tilburg and Igou, 2012, van Tilburg et al., 2013; van Tilburg and Igou, 2017). In other words, boredom in an activity can make people feel that their activities are pointless and meaningless, as noted by Van Tilburg and Igou (2012). However, according to Iwasaki (2007) activities that are meaningful to individuals can contribute to a broader sense of purpose in life, thus improving people's overall quality of life.

Boredom has been assumed as signal to change behavior, which refers to the idea that when a person experience boredom, it serves as a cue or indicator that their current activities or behaviors are not providing sufficient stimulation or satisfaction (Milyavskaya et al., 2019; Martarelli and Wolff, 2020; Wolff and Martarelli, 2020). Danckert et al. (2018) suggested that boredom is a natural response that prompts people to seek out new experiences or engage in different activities to alleviate the feeling of monotony or dissatisfaction. All these indicate that it is more of a signal to influence positive behavior (van Hooft and van Hooff, 2018). However, bored somehow could influence peoples' behavior negatively and cause poor health decisions such as substance use (Enns et al., 2020), gambling behavior (Donati el al., 2021), youth suicide (Bieleke et al., 2021) and irregular

eating habit (Arslan et al., 2021) along with positive behaviors. Eastwood et al. (2012) revealed that such various negative outcomes linked to high-boredom proneness or trait boredom. People with high in boredom proneness have probably problems, and they can make such poor health decisions (Hong et al., 2020). Such high-boredom proneness person may become bored because the behavioral choices available become less attractive as a function of exposure (Martarelli and Wolff, 2020). Especially, some options will become more important to them and will encourage them to engage in activities they would normally avoid (potentially harmful activities) as the value of people's current daily routine activities decreases (Mattioli et al., 2020). Boredom could therefore be a determinant of people's life satisfaction.

In psychology and the social sciences, the relationship between boredom and life satisfaction has been often studied, which has been reported that the relationship between the two is complex. Unsurprisingly, a negative relationship between boredom and satisfaction has been found in some previous research (Arrindell et al., 1999; Gjesme, 1977; Farmer and Sundberg, 1986; Karababa and Tayli, 2020). According to Branquinho et al., (2020) Individuals, who experience a feeling of boredom often, express that they do not enjoy life in situations where monotony, routine and repetitive activities predominate. Life satisfaction then could decline, however, boredom and life satisfaction has not one-way relationships. Boredom could lead to trying new things in one's life, using creativity or setting goals (Danckert et al., 2018). In such cases, individuals who feel bored may increase their life satisfaction by exploring new activities. This study has been based on testing the relationship between leisure boredom, uncontrolled eating, and life satisfaction, and some theoretical possibilities have been illustrated for study on Turkish recreational runners' leisure behavior.

## ***Review of Related Literature***

### *Leisure Boredom*

Leisure boredom started to be used in France in the 12th century. Later, it spread to Italy and England between the 14th and 17th centuries, but the concept has been used today in the same sense as it was in England in the 1700s (Martin et al., 2006). Many leisure researchers mostly have benefited from studies that define boredom to figure out individuals' boredom in leisure. For example, Godbey and Robinson (1997) pointed out the relationship between leisure and these negative emotions individuals' the lives because of the industrial revolution while Martin et al., (2006) clarified boredom as historical process and defied it as generally negative emotions. Smith (1981) explained boredom in leisure as a lack of motivation to participate in any activities like physical activity and stated it as a lack of positive emotions experienced by individuals regarding such activities. In a word, it is notable that researchers accept that the basis of leisure boredom is "*negative emotions during leisure*

*activity*" in a recreational activity, though there are many of these types of similar definitions in leisure studies. Besides such defining efforts, researchers have also focused on the effects of leisure boredom on human behaviors such as excessive smartphone use, internet addiction, tablet use, alcohol use, uncontrolled eating (Castille, 1994; Kil et al., 2021; Lin et al., 2009; Leung, 2015; Peterson et al., 2000). Such behaviors could have positive or negative effect on individuals' satisfaction with life (Akgül, 2016; Searle et al., 1998). Therefore, we suggested that leisure boredom had the potential direct or indirect effect on uncontrolled eating and life satisfaction. This led us to the basic research hypothesis of our study, and we tested that leisure boredom would directly affect uncontrolled eating and life satisfaction.

*Uncontrolled Eating*

Uncontrolled eating is a state of overeating that occurs in response to negative emotions and ego-threatening stimuli (Uluçay, 2020). The theory proved that the situations that will create negativity about the ego create a threat to the self, and individuals tend to eat to avoid these negative effects (Spoor et al., 2007). Studies in recent years have also revealed that negative situations that threaten the ego and its effects cause overeating in individuals. For example, Greeno and Wing (1994) accepted that the basic reason for changes in eating behavior is such emotional arousal. Accordingly, Agras and Telch (1998) revealed that negative emotions give rise to eating-disordered for women, Van Strien and Ouwens (2003) such emotions caused to overrate in obese individuals and in normal-weight dieters. It is therefore argued that certain characteristics of the individual influence the relationship between emotion and eating at least (Spoor et al., 2007), and some researchers proved that this relationship can also affect people's life satisfaction (Balyan et al., 2021, Begin et al., 2018). Thus, we hypothesized that uncontrolled eating could directly affect life satisfaction in the present study and tested this model according to the gender variable of individuals.

*Life Satisfaction*

Life satisfaction was first entered into the health science field by Neugarten et al. (1961) and later began to be studied in a variety of literatures (Gilligan and Huebner, 2002). The World Health Organization (1995) defined life satisfaction as a concept used by individuals to assess their q life quality by gathering the culture and values they experience in addition to physical health, psychological status, and social relationships. Hence, quality of life, considered to be a criterion in determination of life satisfaction (Kahneman et al., 2000; Utsey et al., 2000), is assumed to comprise both objectively observable (e.g., education and health, income, socioeconomic status) and subjective, not easily observed (e.g., perceived enjoyment) variables (Browne et al., 1997; Campbell et al., 1976). The subjective variable of quality of life involves an individual's perception of general

life satisfaction; in other words, people's perception of whether their personal expectations, targets and requirements are met in their lives (Downing, 2006; Veenhoven, 2011). This situation has led to life quality and satisfaction with life being used with closes meaning (Browne et al., 1994; Lyons, 2005; Moons et al., 2006); in fact, the consideration is that the greatest determinant of quality of life is life satisfaction (Herman, 2008). However, Pavot et al. (1991) stated that it will be more accurate to qualify life satisfaction, considered a 'cognitive trait' in the individual's assessment, as a subcomponent of quality of life.

## Material and Methods

### *Participants*

Recreational running activities can be held by some non-governmental organizations and social groups such as Instagram, Telegram or WhatsApp groups. We collected data from 253 participants who attended regularly recreational running activities through these social running groups in Ankara, the capital of Turkey with convenience sampling method. One researcher personally visited these runner groups to carry out all relevant processes. Such these social groups included such features, but were not limited to, (I) they have a sense of sport for everyone, (II) all age group members can participate in their activities, (III) they support various social responsibility projects with their activities program. The number of participants at these groups ranged from about 100 to 1000 We obtained the following limited demographic data from respondents (I) because previous studies indicate demographic data may be poor predictors when examining the relationship between a recreational physical activity like running and (II) to raise the credible response rate by asking fewer demographic questions (Liu et al., 2017). Table 1 continuously and categorically presented participants' demographic information.

Table 1

Participant Characteristics (*N= 253*)

| Continuous Variables | M | SD | Min. | Max. |
|---|---|---|---|---|
| Respondent age | 28.30 | 10.16 | 18 | 66 |
| Number of days physical activity attended per week | 3.61 | 1.57 | 1 | 7 |
| Categorical Variables | | | %a | %b |
| Respondent sex (a=male; b=female) | | | 42.3 | 57.7 |
| Respondent martial status (a= single; b= married) | | | 73.5 | 26.5 |
| Respondent education (a= high school; b=university) | | | 18.2 | 81.8 |
| Respondent who do regular physical activity (a=yes; b=no) | | | 75.5 | 24.5 |

***Note:*** M= Mean, SD= standard deviation, Min.= Minimum, Max.= Maximum

### *Measures*

A questionnaire was used to collect demographic information such as gender, age, and specialization. Besides, A total of 15 items, adapted from some of the instruments used in previous research, were included in the survey instrument for this study (Banna et al., 2018; Diener et al., 1985; Iso-Ahola

and Weissinger, 1990). We then designed a new Turkish survey to collect information using a back-translation procedure, prioritizing these surveys and items that most closely matched our study hypotheses. Detailed explanation of each scale and back translating procedure were given below.

*Leisure Boredom Scale (LBS)*

Iso-Ahola and Weissinger (1990) developed the scale with a total of 10 items consisting of two sub-dimensions named boredom and satisfaction. The scale is a 5-point scale ranging from (1) - strongly disagree to (5) - strongly agree. Only the Boredom subscale of the LBS was used, and it consisted of five items in this study.

*Uncontrolled Eating Scale (UES)*

In literature, people's eating habits were assessed using *There-factor eating questionnaire (TFEQ)* by researchers (i.e., Banna et al., 2018). The questionnaire consisted of 18 items on a 4-point Liker scale "1 = definitely true, 2 = mostly true, 3 = mostly false, 4 = definitely false". Scale scores for cognitive restraint, uncontrolled eating and emotional eating have been calculated from responses to each of the 18 items. UES is one of this questionnaire's subscales, and this factor consisted of five items.

*Life Satisfaction Scale (LSS)*

Life satisfaction was a five-item measure with LSS. Each item was scored on a 7-point scale ranging from '1 strongly disagree' to '7 strongly agree', as developed by Diener et al. (1985).

***Covariates***

Just one demographic variable (gender) that might influence the relationship between leisure boredom, uncontrolled eating, and life satisfaction as covariance. We used gender as a dichotomous variable, dummy coded 0=female and 1=male in this study.

***Process of Back-Translation***

For the translation of the English survey items into Turkish, we used a back-translation procedure. Firstly, a bilingual Turkish-English speaker translated the items into Turkish. Second, it was back translated into English by another native speaker of Turkish fluent in English. Finally, A Native American fluent in Turkish has been asked to check the differences in meaning between the back-translated instrument and the original instrument. Comparing the two forms, both instruments reflected each construct domain equally.

### *Procedure*

Council of Higher Education's Directive Scientific Research and Publication Ethics was followed in the current research. As our research hypotheses specifically related to participants who had participated in recreational running, data were collected using purposive convenience sampling. We accepted that the sample was relatively homogenous, for we obtained data just from recreational running groups. The data were obtained from the participants during the activity, accompanied by the author. Participants were asked to agree to participate in the study before they were asked to complete the Turkish Scale form. All surveys took approximately 4 weeks to complete.

### *Process of Data Analysis*

The theoretical model was analyzed using partial least squares structural equation modelling with Mplus version 8.3. Mplus has been used in the social sciences (Finch and Bolin, 2017). In line with SEM, researchers could simultaneously assess the validity of measures and hypothesized causal pathways within a unified model with Mplus. To provide general information about the latent factors and to contextualize the findings, we calculated descriptive statistics and correlations. Later, we analyzed our theoretical model with partial least squares structural equation using Mplus. Maximum likelihood (ML) was used to estimate the parameters in our model. We assessed the overall model using several goodness-of-fit indices such as $x^2$/df, SRMR (standardized root mean residual), CFI (comparative fit index), TLI (tucker-lewis index), RMSEA (root mean squared error of approximation). The researchers (Tabachnick and Fidell, 2006; Wheaton et al., 1977) have reported that $x^2$/df must be 4.00 or less, TLI and CFI must be above 0.95 to achieve acceptable model fit, RMSEA and SRMR must be 0.06 and 0.08, respectively.

## Results

### *Descriptive Statistics*

Means and SDs for each of the three constructs has been demonstrated in Table 2. All means scores were above the mid-point of 2.00. LBS had the lowest mean scores with M= 2.75 while UES had the highest mean score with M= 4.22. Besides, The Cronbach's alpha values for the adapted Turkish scales has been presented in Table 2. The internal consistency of the scales ranged from acceptable to excellent.

Table 2

Description Statistics

| Construct | Number of items | M | SD | Skewness | Kurtosis | $\alpha$ |
|---|---|---|---|---|---|---|
| LSS | 5 | 2.75 | 0.68 | -0,26 | -0.62 | 0.88 |
| LBS | 5 | 2.29 | 1.11 | 0.78 | 0.01 | 0.87 |
| UES | 5 | 4.22 | 1.37 | 0.00 | -0.65 | 0.76 |

***Note:*** "LSS= Life satisfaction scale, LBS= Leisure boredom scale, UES= Uncontrolled eating scale"

### *Evaluation of the Measurement Model*

Composite Reliability (CR) and Average Variance Extracted (AVE) evaluations were made to evaluate the measurement model (3 latent variable and 15 observed variables) put forward in the study (Table 3). The measurement model consisting of Leisure Boredom (LBS), Uncontrolled eating (UES) and Life Satisfaction (LSS) variables was tested. The ML (Maximum Likelihood) calculation method was used because it both meets the multiple normality assumption and can make stable and unbiased parameter estimations. Discriminant validates and convergent of this construct in the study were examined prior to testing the model. Convergent validity was assessed by examining the item reliability, composite reliability (internal consistency), and the average variance extracted (AVE) of each construct. The critical ratio (CR) was evaluated to measure item reliability, which means an item is significantly different from zero at the $p<0.05$ level when the CR value of 1.96 or more indicates. Also, we computed AVE as a measure of the overall amount of variance that is attributed to the construct in relation to the amount of variance attributable to measurement error. Fornell and Larcker (1981) judged convergent validity to be adequate if AVE equals or exceeds 0.50. In our findings, respectively Composite reliability for all constructs were ranged from 0.77-0.89 and, at the construct level (Table 3), All AVEs were above the recommended value of 0.50, which means convergent validity was achieved. In Table 4, The AVEs for LSS, LBS and UES had greater than 0.50 score, proving acceptable convergent validity. The square roots of AVEs on these latent variables had greater than the correlations with other constructs, which imply the model proved adequate discriminant validity. Finally, goodness of fit index values proved that the measurement model had an adequate fit index with "$x^2/df= 1.72$", "RMSEA= 0.05 (90% CI= 0.03 - 0.06)", "CFI= 0.96", "SRMR= 0.04", "TLI= 0.95".

Table 3

Results of Measurement Model's Confirmatory Factor Analysis

| Factors | Items | S.E | CR* | $R^2$ |
|---|---|---|---|---|
| LSS | In most ways my life is close to my ideal even | 0.08 | 13.7 | 0.75 |
| | The conditions of my life are excellent even | 0.08 | 14.3 | 0.78 |
| | I am satisfied with my life even | 0.08 | 16.7 | 0.86 |
| | So far, I have gotten the important things I want in life even | 0.08 | 16.9 | 0.87 |
| | If I could live my life over, I would change almost nothing even | 0.11 | 11.2 | 0.65 |
| LBS | Leisure time is boring | 0.07 | 11.4 | 0.66 |
| | In my leisure time, I usually don't like what I'm doing, but I don't know what else to do | 0.06 | 16.5 | 0.86 |
| | In my leisure time, I want to do something, but I don't know what I want to do | 0.07 | 16.9 | 0.87 |
| | I waste too much of my leisure time sleeping | 0.08 | 12.3 | 0.70 |
| | I do not have many leisure skills | 0.07 | 12.3 | 0.70 |
| UES | When I smell a sizzling steak or juicy piece of meat, I find it very difficult of keep from eating, even if I have just finished a meal | 0.06 | 8.91 | 0.57 |

| | | | |
|---|---|---|---|
| When I see a real delicacy, I often get so hungry that I have to eat right away | 0.05 | 13.5 | 0.81 |
| I am always hungry enough to eat at any time | 0.05 | 11.5 | 0.70 |
| How often do you feel hungry? | 0.05 | 8.77 | 0.56 |
| Do you go on eating binges though you are not hungry? | 0.06 | 7.57 | 0.49 |

***Note:*** "*p<0.001; LSS= Life satisfaction scale; LBS= Leisure boredom scale; UES= Uncontrolled eating scale; S.E = Standardized estimate; CR= Critical ratio"

Table 4

Discriminant Validity of 15-item Turkish Scale

| | CR | AVE(≥0.50)[a] | 1 | 2 | 3 |
|---|---|---|---|---|---|
| 1.LSS | 0.91 | 0.67 | **0.81** | | |
| 2.LBS | 0.89 | 0.64 | -0.25 | **0.80** | |
| 3.UES | 0.83 | 0.50 | 0.10 | -0.24 | **0.70** |

***Note:*** "[a]Acceptable level of reliability or validity; Bolded values on the diagonal are the square root of the AVE"; AVE = average variance extracted; CR = construct reliability.

### *Hypothesis Testing with Structural Equation Model (SEM)*

The SEM released an adequate model fit with "$x^2$/df= 1.55", "RMSEA= 0.04 (90% CI= 0.03 - 0.06)", "CFI= 0.96", "SRMR= 0.04", "TLI= 0.95". Table 5 presented the results of the negative and positive direct effects.

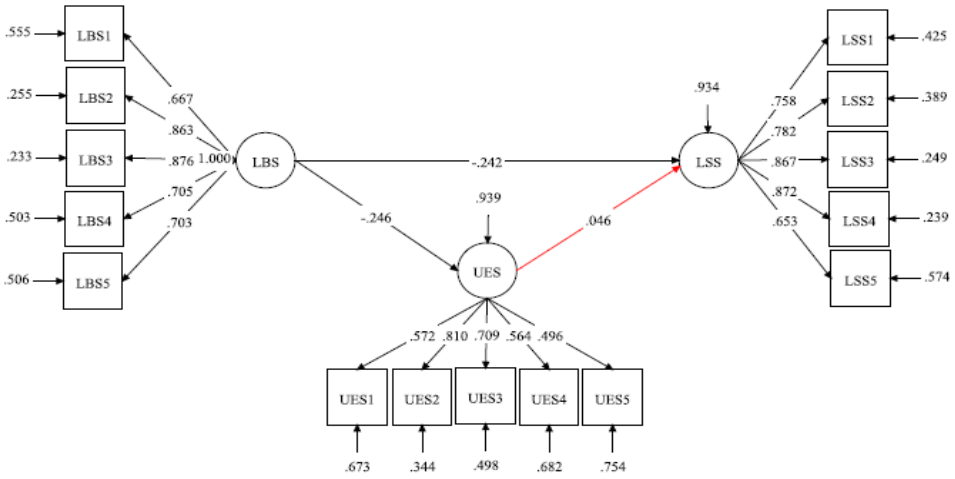


Figure 1. Structural equation model without group

***Note:*** Red arrow means insignificantly direct effects; LSS= Life satisfaction scale; LBS= Leisure boredom scale; UES= Uncontrolled eating scale

Two significant negatives directly effects and one insignificant positive directly affect were identified in our model (see Figure 1). Table 5 presented the estimated path coefficients of the direct effects obtained from the SEM analysis. As for our hypothesis testing respectively, leisure boredom had significant directly negative effects on life satisfaction (β= -0.24; p<0.05) and uncontrolled eating (β= -0.24; p<0.05). Uncontrolled eating had insignificant directly positive effects on life satisfaction

(β= 0.04; p>0.05). Regarding the mediating effect analysis and no significant indirect effect were identified between leisure boredom and life satisfaction (β= -0.01; p>0.05).

We also tested our model among groups based on their gender, as a criterion for attending a recreational running event (see Figure 2). The fit for MIMIC (*multiple indicators and multiple causes model*) proved that the measurement model had an adequate fit index with ($x^2$/df= 1.60, RMSEA= 0.04 (90% CI= 0.03 - 0.06), CFI= 0.96, TLI= 0.95, SRMR= 0.04). However, In Table 6, the results of this model as to respondents' gender variable presented that there were no significant direct effects on leisure boredom, uncontrolled eating, and life satisfaction. That is, gender was found not to significantly affect the model (p>0.05).

Table 5
Significant Direct Effects Without Group

| | Coefficient | Hypothesis |
|---|---|---|
| Leisure boredom→Life satisfaction | -0.24* | 1a |
| Leisure boredom→Uncontrolled eating | -0.24* | 2a |
| Uncontrolled eating→Life satisfaction | 0.04 | 3a |

Table 6. Significant direct effects according to group variable

| | Coefficient | Hypothesis |
|---|---|---|
| Gender→Leisure boredom | -0.07 | 1b |
| Gender→Uncontrolled eating | -0.01 | 2b |
| Gender→Life satisfaction | 0.00 | 3b |

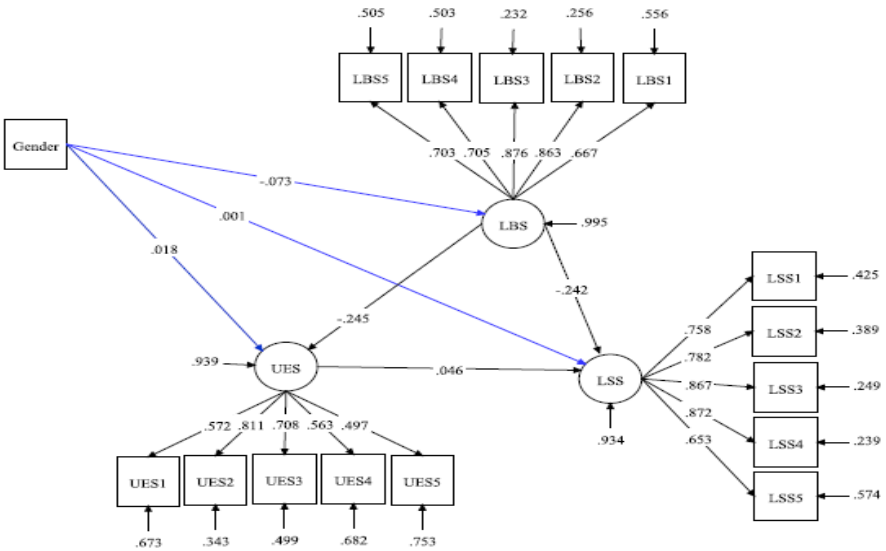


Figure 2. Structural equation model according to group variable

***Note:*** Blue arrows means insignificant directly effects; LSS= Life satisfaction scale; LBS= Leisure boredom scale; UES= Uncontrolled eating scale

## Discussion

To examine the leisure behavior of the Turkish population, this study explains the relationship between recreational runner individuals' perceptions of leisure boredom, uncontrolled eating behavior

and life satisfaction. All these findings have revealed that boredom in leisure recreational running activities can negatively affect the life satisfaction of individuals and cause risky behaviors such as eating disorders.

As firstly hypothesized, the study represents an initial attempt to examine the role of boredom in leisure on Turkish recreational runners' life satisfaction. Our results indicate that boredom in leisure negatively affected Turkish recreational runners' life satisfaction. Iso-Ahola and Weissinger (1990) stated that if leisure does not contain optimal stimuli or psychological rewards, leisure can lead to boredom and thus negatively affect life satisfaction. In many previous studies, it has been revealed that leisure physical activities have positive effects on life satisfaction of individuals (Kim et al., 2018; Mutz et al., 2021; Ragheb and Griffith, 1982; Rodríguez et al., 2008; Sato et al., 2016). However, for various reasons, individuals may get bored with their leisure physical activities, and this may cause their life satisfaction to decrease. This result is not surprising when the literature is reviewed, because many studies have shown that there is a negative relationship between leisure boredom and life satisfaction (Iwasaki, 2007; Wang et al., 2008). The results of a study conducted by Spruyt et al. (2018) show that there is a close relationship between boredom in leisure and life satisfaction, and that this relationship varies by gender and age. In their study, while the life satisfaction of women is lower than that of men, boredom increases with increasing age. In our study, however, it was concluded that the variable of gender did not have a significant effect on life satisfaction, on uncontrolled eating and on boredom in leisure.

As we secondly hypothesized, the study represents an attempt to examine the role of boredom in leisure on Turkish recreational runners' uncontrolled eating behaviors. Our results indicate that boredom in leisure affected Turkish recreational runners' uncontrolled eating behaviors. Like the findings in the recreation literature, it seems that as boredom increases in leisure, uncontrolled eating levels will also be affected by this situation. Crockett et al. (2015) revealed in their study on adolescents that boredom can lead to uncontrolled and excessive eating behavior. In the study conducted by Moynihan et al. (2021), it was concluded that as the boredom level of the participants increased, their uncontrolled eating and consumption behaviors increased in parallel. In another study, Gürkan et al. (2022) concluded that adolescents with type 1 diabetes have an increased risk of uncontrolled eating behavior when they are bored in their leisure.

Another result of the study is that uncontrolled eating behavior has an insignificant direct positive effect on life satisfaction, but there is no mediating effect between boredom in leisure and life satisfaction. In their study, Samdal et al. (2022) determined that because of the healthy eating training they applied to 42 of the 86 people (78% of whom were obese) they followed in a 6-month period, their life satisfaction levels increased along with their healthy eating tendencies. The study of

Wadsworth and Pendergast (2014) demonstrates that obesity negatively affects life satisfaction and life satisfaction can be influenced by the prevalence of obesity in a given geographic context.

In addition to better understanding the relationship between leisure boredom, uncontrolled eating behavior and life satisfaction, the present work also showed that such studies in health and psychology can better understand the psychosocial effects of recreational running.

## Conclusion

In this study, the relationship between uncontrolled eating, leisure boredom and life satisfaction were examined, and the leisure behaviors of recreational runners were revealed compared to the Turkish population. The results of the research revealed that boredom in leisure had a negative impact on uncontrolled eating and life satisfaction. On the other hand, it was determined that uncontrolled eating had no effect on life satisfaction and did not create an indirect effect in the model.

This research has several limitations. Firstly, all scales in study (leisure boredom, uncontrolled eating, and life satisfaction) were evaluated within just one sub-dimension that is thought to evaluate people only in terms of these topics. This shows that these topics has been limited and examined in the study. Secondly, we have noticed some criterions as individuals are engage in recreational running activity, they are 18 years and over, they have been involved in recreational activity for one year or more, they should be in a runner group for about one years, and they were regularly participating this activity. This indicates the limitations of the research with regards to sample group. For this reason, we can evince that this study finding cannot be directly generalized on behalf of individuals participating in physical activities in other countries. Future research should broaden the current study by examining other variables that are thought to affect people's behavior. This will contribute to a deeper understanding of the study. Besides, future studies that include different types of activities and sample groups from various cultures will promote about filling crucial gap within the relevant literature.

## Ethics Committee Permission Information

Ethical evaluation board: Bartın University Social and Human Sciences Ethics Committee
Date of the ethical assessment certificate: 23.11.2022
Number of the ethical assessment certificate: 2022-SBB-0505

## Declaration of Contribution Rates of Researchers

The introduction, method and results parts of the study were carried out by the first author, while the discussion and conclusion parts were carried out by the second author.

## Conflict Declaration

In the present study, the author(s) did not declare any conflicts.

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