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Research Article

The Moderating Role of Spirituality in the Relationship Between Binge Eating Disorder and Depression*

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Abstract

A considerable body of academic literature has been published about spirituality, eating disorders and mood disorders. Although there are several studies about the relationship between mood disorders and eating disorder, or the effect of spirituality on mood disorders, the role of spirituality in the relationship between the mood disorder and eating disroders has not been discussed sufficiently. Thus, the primary aim of this article is to examine to moderating role of spirituality on the relationship between binge eating disorder (BED) and depression. 300 Turkish individuals have participated in this correlational study and the range of ages relies on between 18 and 33. Demographic information Form, Beck depression Inventory, Spirituality Scale, SCL-90 Symptom Checklist and Binge Eating Scale were used for data collection in the study. The results showed that, there is a significant negative correlation between the levels of spirituality and the depression ($r= -.0.229$, $p<.001$). However, there is a positive correlation between the depression and BED ($r= 0.477$, $p <.001$). Spirituality has a significant moderating effect on the correlation between the depression and BED ($\beta = -0.106$, $p = .034$) although there is not a statistically significant correlation between spirituality and BED. Thus, it can be said that spirituality can serve as a protective barrier for elevation of the mood disorder which may result in prevention for external coping methods for emotional regulation such as eating, gambling, shopping so on and so forth. In other words, it is important to consider the interaction between the psychosocial factors and spirituality in the formulation of any treatment or preventive approaches for binge eating disorder.

Keywords:
Binge Eating Disorder • Depression • Spirituality.

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Introduction

Eating disorders have become prevalent between adults, and it may have adverse effects on the sustenance of the well-being. Furthermore, BED usually starts in adolescence that may persist on adulthood as well, and it is also considered one of the comorbidities with the psychological disorders which can be one of the significant components of high mortality rates. The World Health Organization (WHO, 2021) declared obesity as a "global epidemic," with a prevalence of 16% among the adult population. WHO highlighted the risk of obesity as an upcoming global burden which may affect approximately 1 million individuals till 2030, so the need for developing multidisciplinary strategies for treating eating disorders become inevitable (APA, 2013; WHO, 2021). The recent data showed that approximately 50%-70% of individuals diagnosed with eating disorders manifest clinically significant depressive symptoms (Hambleton et al., 2022; Ulfvebrand et al., 2020). These psychiatric comorbidities can worsen the course of eating disorders and contribute to their chronicity (Altınyazar & Maner, 2014; Momen et al., 2022).

Moreover eating disorders are usually comorbid with mood disorders. Mood disorders are manifested as significant impairment in daily life functioning due to the emotional instability (Uğur, 2008, p. 60). Although the etiology of these symptoms may be affected by various conditions, the level of stress is one of the common triggers in the onset of psychological disorders (Demir, 2021; Huseynbalayeva, 2023). Güngör (2021) and Öksüz (2012) also found a reciprocal relationship between depression and emotional eating behaviors. In other words, mood disorders can be a trigger for depressive symptoms, and vice versa (Deveci et. al., 2016; Stice et al., 2000). Therefore, Allen et al. (2014) indicated that early intervention for the treatment of eating disorders is the optimal course of treatment, and strategies for emotional regulation or coping mechanisms with stress can play a critical role in early intervention.

Spirituality can be a source of emotional regulation, and the body of the literature shows a negative correlation between depression and spirituality (Koenig et al., 2012). Şirin and Dursun (2021) also stated that spirituality can provide a source of inner resilience that may facilitate coping with stressful events and trauma thereby maintaining psychological well-being. These studies showed the capacity of spirituality in the treatment of depression however, it is still ambiguous how spirituality functions in the relationship between depression and BED. Therefore, this study aims to examine the moderating role of spirituality in the relationship between binge eating disorder (BED) and depression.

Theoretical Framework

Gross (2014) posited a emotional regulation model in which he defined emotions as reactions to external conditions. He recommended these reactions were shaped by vaious factors such as *situation selection, situation modification, attentional deployment, cognitive change,* and *response modulation.* According to his model *modification of situation*, *reappraisal of external conditions*, or *attentional distraction* could play an important role on emotional regulation. Religion was also treated one of the contextual factors in relation with a cognitive reappraisal of response for the daily life situations. Indeed, Pargament (1997) also claimed that religion can be a facilitator to cope with difficult circumstances. He posited that religions could provide sources for individuals which can affect cognitive processes of reinterpreting difficult situations, or they can provide specific behavioral patterns such as praying to alleviate negative emotions. However, recent developments in post-21st century literature, as well as the American Psychological Association's (APA) decision to update the name of 36th Division as the *Psychology of Religion and Spirituality* which have contributed to a shift in perspective regarding the role of spirituality in coping with challenging issues within the context of relationships with the sacred (Düzgüner, 2016, p. 18). This shift aligned with the evolving landscape of post-21st century literature, where spirituality emerged as a resource for addressing complex challenges. Although spirituality arised insequential, but it functioned as a transcendental resource for coping in daily life problems.

Spirituality

Spirituality and religion were interchangeably used till the American Psychological Association's (APA) decision for updating its 36th Division as a "Psychology of Religion and Spirituality" and Düzgüner (2013) also emphasized the evolution of spirituality in a blurred framework of religion, and she posited that spirituality has ethical, psychological, religious and mystical dimensions. Thus, spirituality is embodiment of a meaning of life for individuals at multidimensional levels.

Sheldrake (2007) argued that spirituality is manifested as a form of self-realization or inner exploration. Moreover, spirituality also might be treated beyond a mere individual quest for meaning in relation with the advent of millennial era. Although revival in Western culture triggered the search of meaning in individuals, spirituality and religion/religiosity had been often used interchangeably in the body of the literature until the mid-20th century. Furthermore, spirituality gained a more defined perspective within the Christianity and Islam. David Elkins[1] argued that it is possible to be spiritual without being religious and even he proposed a program for spiritual life without religion although he was still drawing heavily on traditional religious teachings (Nelson, 2009). Considering this paradox, Horozcu (2010) posited that human beings can possess experiences that are not religious in nature yet, but they can

1 Famous American psychologist known in the field of spiritual psychology.

still be regarded as spiritual. Worthington et. al. (2010) also noted that spirituality and religiosity were often used interchangeably in everyday life. As a result, people might identify themselves as "spiritual but not religious, "neither spiritual nor religious, "both spiritual and religious," or "religious but not spiritual" (Acar, 2023). American researchers defined the term "religious individualism" to emphasize the level of subjectivity in the religious expression and American pollster George Gallup Jr. also conducted a survey in which participants stated that the lack of attendance in church or synagogue should not be considered as a low level of religiosity (Dillon, 2003).

The recent studies showed that spiritual engagement could play a role in reducing depression, and it could foster psychological resiliency via enhancing physical health outcomes such as promotion of inner peace, a sense of meaning, and overall life satisfaction (Bożek et al., 2020; Long et al., 2024). Pargament (1997) also emphasized the positive effect of religious sources in coping with adverse life events. However, Hill et al. (2000) claimed that religion and spirituality can serve as alternative therapeutic techniques of mental illnesses, or they could worse the prognosis in terms of different demographic variables.

Koç (2010) highlighted the role of gender, and he found that men tend to have higher levels of intrinsic religiosity than women. Moreover, jobs and level of income were also important variables to explain variations in religious orientation. Koenig et. al. (2012) also highlighted the importance of age, and they found that elder individuals were more advantageous to benefit of spirituality in comparison to younger individuals. Şirin & Dursun (2021) also reported a significant relationship between spirituality and the sense of meaning in life in their study with 411 participants. They found that relationship status was a significant variable to predict sense of meaning. Single ones reported higher fullfillment in the sense of meaning than the married ones, and they also found that spirituality was one of the predictors of the sense of meaning in life.

Moreover, spirituality could be associated with the relational patterns. Göker (2023) also found a positive correlation between secure attachment and an increased propensity for forgiveness and spirituality. Conversely, an increased propensity for forgiveness and spirituality were observed in individuals who have avoidant and anxious-ambivalent attachment style (Göker, 2023). Tetzlaff et al. (2016) also indicated that low quality of family functioning was associated with the higher levels of BED. As it can be seen in the existing research the potential influence of demographic variables or components related to an individual's personal history and life experiences, such as attachment style, family functioning, and spirituality were effective on the development of BED as well. On the other hand, Ekici (2023) examined the relationship between spirituality, anxiety, and loneliness on 464 students, and he indicated that higher levels of spiritual well-being were associated with lower levels of anxiety and loneliness, although loneliness was related with the slight increase in the levels of anxiety. In the context

of depression, it has been observed that loneliness was also related to the depressive symptoms of Turkish university students as well. Furthermore, Yıldırım et. al. (2018) found that the moderate level of loneliness was also associated with the development of eating disorders. Grogan et al. (2020) suggested that individuals diagnosed with bulimia nervosa and binge-eating disorder exhibited an elevated response to loss, family separation, and negative parent-child interactions when compared to those diagnosed with anorexia nervosa. Thus, Faraji and Firat (2022) also emphasized the significance of emotional regulation had a significant role in the development of emotional eating.

However, spirituality could serve as a buffering element to cope with the symptoms of eating disorders via regulating the emotions. Akrawi et al. (2015) showed that intrinsic religiosity and a secure relationship with God were associated with lower levels of disordered eating and body image concerns. Similarly, Mitra et al. (2023) emphasized that spirituality may provide relational support in recovery processes, Beaulieu (2022) also highlighted the importance of religious motivation in his study, and he found that the lower levels of disordered eating behaviors was correlated with the alteration of behaviors with the higher religiosity. Ayten (2013) also found that religiosity was positively associated with life satisfaction and health-related behaviors, such as a healthy diet and exercise. Additionally, Tümen (2023) also underlined that eating disorders may occur across in different forms depending on the variations on the religious and cultural frameworks. He suggested to include religiosity and spirituality as relevant variables for clinical assessment of BED. In sum, these findings highlighted that spirituality could act as both a protective and a risk factor for eating disorders depending on cultural context and individual interpretation.

Binge Eating Disorder (BED)

Binge Eating Disorder (BED) in the DSM-5 is defined as a loss of control overeating behaviors and consuming excessive amounts of food (Worthington et al., 2011). One of the most significant psychological factors contributing to BED is the failure of emotional regulation which results to regulate their feelings through eating (Haedt-Matt & Keel, 2011). A depressive mood can trigger binge eating episodes, and distorted body image perception also plays a crucial role in the development of eating disorders (Harrison et al., 2016; Leehr et al., 2015;). Especially the fear of being perceived as overweight could contribute to the development of BED among adolescent females. Coşkun-Efe (2022) also indicated that there was a significant positive correlation between depression and eating disorders in his study on university students.

However, personality disorders or depression were also associated with eating disorders. Keçeli (2006) involved 34 women who had been diagnosed with an eating disorder (16 with anorexia nervosa [AN] and 18 with bulimia nervosa [BN]) and 34 women who did not have such a diagnosis in her study, and she found a greater fre-

quency of personality disorders among women diagnosed with eating disorders, particularly anorexia nervosa (AN). Additionally, there was a high level of prevalence on the psychiatric disorders among the first-degree relatives of the participants with eating disorder (Keçeli, 2006). Thus, it showed the significance of the psychosocial factors in the prevalence of eating disorders.

On the other hand, there is an also extant body of the literature which also highlighted the relationship between environmental factors and the eating disorders. Females diagnosed with BED had families with high rates of psychopathological symptoms such as maternal phobic anxiety and psychotic tendencies. Moreover, families of individuals with BED usually had struggle to meet emotional needs, imposed rigid boundaries, and had difficulty of adapting situations (Blomquist & Grilo, 2015; Ferriter & Ray, 2011). Although gender was not gender was not a significant variable for perception of body image and self-esteem, however women were more likely to choose binge eating to regulate their anxiety anger, frustration, and depression (Ernst et al., 2021; Peleg et al., 2024).

Furthermore, social factors also play a significant role in the etiology of BED. Social media might also be regarded as one of the risk factors for the glorification of thinness which might result in dissatisfaction of negative body image perception. Negative body image was also linked with the likelihood of the onset of BED (Aruguete et al., 2005). Ergüney (2012) also emphasized the role of client's level of motivation for the treatment level of BED in relation with the depression. In other words, sociocultural efffects on the motivation of the treatment of BED were also crucial and a subsequent study on a sample of Christians showed that that the tension towards the female body, particularly within conservative religious communities, had a tangible impact on the level of psychological well-being, and contributed to the development of eating disorders (Grenfell, 2006). However Thomas et al. (2018) found a positive correlation between the body image dissatisfaction between disordered eating attitudes, but these attitudes were negatively related with the body image ideals in Muslim Women in UAE. Thus, the role of spirituality on the development of BED within crosscultural settings needs for further investigation.

Depression

Psychiatrist and medical historian Stanley Jackson referred to depression as a condition with "remarkable consistency," and it is important to acknowledge that this phenomenon has been characterized by virtually the same attributes since the earliest Greek medical texts up to the present-day Diagnostic and Statistical Manual of Mental Disorders (DSM). These features include profound sadness, hopelessness, loss of appetite, insomnia, fatigue, irritability, restlessness, lack of interest or pleasure in usual activities, and social withdrawal. However, traditional psychiatry considered these symptoms as a regular

part of life unless their duration and intensity were disproportionate to the context until the release of DSM-III (DeRubeis & Strunk, 2017, p.11).

The etiology of major depressive disorder is generally divided into three main categories: biological, psychosocial, and genetic. However, this categorization is not absolute and there can be a substantial interaction among these factors (Hocaoğlu & Helvacı-Çelik, 2016). Children who have parents with depression had a higher risk of developing depression compared to children whose parents do not have depression genetically. Nonetheless, having a parent with depression was not sufficient a reason to assess the risk of development psychopathology for children (National Research Council and Institute of Medicine, 2009). In other words, early childhood traumas significantly increased the risk of developing depression in adolescence and adulthood. However, Ünal et al. (2002) reported that over 70% of participants diagnosed with depression indicated that hey have experienced adverse life events prior to their diagnosis (Ünal et al., 2002). Thus, recent traumas also had a critical role in the development of psychological disorders.

Binge Eating Disorder (BED) is characterized by a loss of control over eating behaviors and it has adverse effects on psychosocial functioning that resulted in the decrease in the quality of life. Current body of the literature above indicated depression as one of the serious comorbodities of BED. In other words, depressive symptoms triggered disordered eating behavior as a way of emotional regulation, which contributes the elevation of the symptoms in the course of chronicity of BED. Therefore depression could be treated as one of the critical variables for the course of BED and the rate of responsiveness to the treatment. In other words, coping mechanisms with the stressful situations played a key role in the determination of the severity and the trajectory of BED and depression. Spirituality also provided inner peace, meaning in life or fostered hope, and resilience which served as a facilitator to reduce impact of depressive symptoms and psychological vulnerability related with BED as it was mentioned above. Thus, potential modertaing role of spirituality on the reliatonship between BED and depression may provide significant implicants for clinical intreventions as well as the preventive mental health strategies.

Method

This section presents about the research model, features of sample, hypotheses, and the scales for data collection and the data analysis. The ethics committee approval for this study was obtained by the rectorate on behalf of Istanbul Sabahattin Zaim University with the document numbered E-34555043-302.14.01-2500005559.

Research Model and Sample

This study adopted a correlational model, one of the quantitative research designs. The data was collected from 300 individuals aged between 18 and 33. The subjects of this study were recruited through the implementation of a structured online questionnaire. Participants were chosen through the snowball sampling method and asked to complete the survey forms. All responses were collected anonymously, and the informed consent was obtained from the relevant ethics committee prior to data collection. The demographic structure of study group as it follows (Table 1.)

Table 1.
Demographic Variables

Age	**n**	**%**
18-25	147	49.0
26-32	153	51.0
Gender		
Male	44	14.7
Female	256	85.3
Education		
Primary School	9	3
High School	23	7.7
Associate Degree	42	14.0
Bachelor's Degree	164	45.7
Master's Degree / Doctorate	62	20.7
Job Status		
Unemployed	126	39.0%
Employed	197	61.0%
Marital Status		
Married	115	38.3
Divorced / Widowed	9	3.0
Single	176	58.7
Perceived Economic Situation		
Low	51	17.0
Medium	226	75.3
High	23	7.7
BMI Index		
Skinny	22	7.4
Normal	154	51.5
Overweight	85	28.4
OBESE 1st Class	28	9.4
OBESE 2nd Class	10	3.3
How do you define yourself spiritually?		
I am not religious, and I am not very spiritual.	21	7.0
I am both religious and spiritually strong.	127	42.3
I am not religious, but I am spiritually strong.	71	23.7
I am religious, but my spirituality is not strong	81	27.0
Has anyone in your family been diagnosed with an eating disorder?		
Bulimia Nervosa	1	0.3
Binge Eating Disorder	11	3.7

Table 1.
Demographic Variables

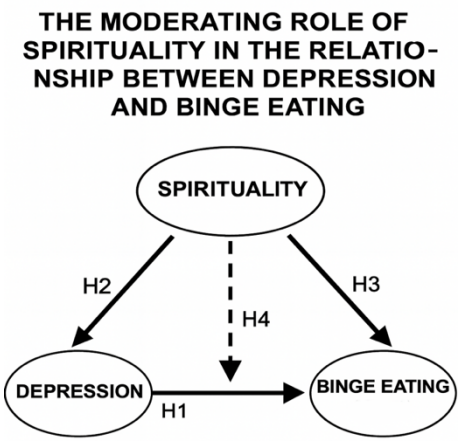
Age	**n**	**%**
Anorexia Nervosa	1	0.3
No	278	92.7
Other	9	3.0
In what situations do you need food the most?		
Other	55	18.3
When you are happy	137	45.7
When I was shocked	1	0.3
When I'm worried	10	3.3
When you're nervous	39	13.0
When you're sad	35	11.7
When you are angry	23	7.7
Do you have a psychiatric disorder?		
Yes	22	7.3
No	278	92.7
Do you have any chronic illnesses?		
Yes	254	84.7
No	46	15.3
Do you have any psychiatric illness or disorder?		
Yes	32	9.9
No	291	90.1

As it can be seen in the Table 1. 49% of the participants were between the ages of 18 and 25, while 51% were between the ages of 26 and 32. With respect to gender distribution, 85.3% of the sample was women and 14.7% was men. 45.7% of the participants had a bachelor's degree, 20.7% had a master's or doctorate degree, 14% had an associate degree, 7.7% had a high school degree, and 3% were primary school graduates. 61% of the participants was employed, 39% of them was unemployed. When it comes to their marital status, 58.7% of them was single, 38.3% was married, and 3% of them was divorced or lost their spouse. Moreover, 75.3% of the participants stated that their perceived level of economic status was as medium, and the rest indicated as low and high respectively (17%= low, 7.7% =high level). The BMI Index data indicated that 51.5% of the participants was classified as normal weight, 28.4% as overweight, 9.4% as obesity class I, 3.3% as obesity class II, and 7.4% as underweight. While 7.3% of the participants reported having a current psychiatric diagnosis, 9.9% stated that they had a past or current psychiatric disorder. The rate of chronic disorders was also relatively high (84.7%).

While 42.3% of the participants defined themselves as both religious and intensely spiritual, 27% saw themselves only as religious, 23.7% defined themselves only as intensely spiritual, and 7% saw themselves neither as religious nor intensely spiritual. 92.7% of the participants stated that there was no diagnosis of any eating disorder in their family. 3.7% reported a history of binge eating disorder in their family. Bulimia nervosa and anorexia nervosa were reported by 0.3% of the sample. 45.7% of the participants stated that they felt the need to eat the most when they were happy.

Other important triggers included other situations (18.3%), tension (13.0%), sadness (11.7%), and anger (7.7%). Anxiety (3.3%) and shock (0.3%) were at lower rates. The data were analyzed using SPSS and AMOS software. Model fit indices were evaluated within the scope of structural equation modeling (SEM), and confirmatory factor analysis (CFA) was also performed. The structural equation model was developed to examine the relationships among variables, including covariance, correlation, and regression coefficients. These statistical measures were used to test the research questions.

Figure 1.
Research model



The main research question "To what extent does relationship between depression and binge eating disorder differ across the levels of spirituality?"

The hypotheses are stated below:

H1: There is a positive relationship between depression and binge eating disorder.

H2: There is a negative relationship between the level of depression and spirituality.

H3: There is a negative relationship between spirituality and binge eating disorder.

Moderating Effect

H4: The level of spirituality has a moderation effect on the relationship between depression and binge eating disorder.

Data Collections

Binge Eating Disorder Scale, Beck Depression Inventory, Spirituality Scale, SCL-90, and Demographic Information Form were used to collect data in this study. *The Binge Eating Disorder Scale* consists of 16 items, and it was used to assess the behavioral, emotional, and cognitive symptoms about the Binge Eating Disorder (BED). Each item contains 4 Likert type assessment scale, and participantmark the statement that described their eating behaviors best. The total score of Binge Eating Disorder Scale was evaluated between 0 and 46, and higher scores show the severity in binge eating behaviors. The scale was used not only to support the diagnosis of BED, but also to monitor the course of BED during the treatment process and to evaluate psychopathological symptoms. Turkish validity study of this scale was conducted by Bilim-Baykan and Durak-Batıgün (2024), and the Cronbach value was found to be 0.85.

Beck Depression Inventory was used to examine the level of depression rather than to diagnose depression clinically (Beck et. al., 1996). It consists of 21 self-assessment items, and each item consists of 4 options. The total score scale was between 0 and 63. As the score increases, the level of depression increases. Although there were many studies thas tested the validity and reliability of the scale in the literature, the results of these studies varied between r=0.60 and r=0.87. (cit. Hisli, 1989 p.4). In a study conducted with 259 students at Ege University to measure the validity of the scale, the Cronbach alpha coefficient was found to be r=0.80, and this result was consistent with previous foreign-based studies. (cit. Hisli, 1989).

The Spirituality Scale consists of 7 sub-dimensions and 27 items, and suitable for the individuals aged 18 and over. It has 24 positive and three negative items and is a 5-point Likert-type scale. The responses consist of 5 items: "(1) Does Not Suit Me at All, (2) Does Not Suit Me, (3) Suits Me Somewhat, (4) Suits Me Quite, (5) Suits Me Completely". Negative items were coded in reverse. The highest score that can be obtained from the scale is 135, and the lowest score is 27. If the scores rise it means that the level of spirituality also increases (Şirin, 2018, p. 1292). As a result of the analyses, the content validity index value was 0.77, the content validity rate was 0.69, and the Cronbach alpha value for internal consistency analysis and reliability was α=90 (Şirin, 2018, p. 1303).

SCL-90, on the other hand, is a Likert-type scale consisting of 90 questions, used to determine the psychological symptoms of individuals and to exclude any psychopathological comorbidities. The validity and reliability study of this test was conducted with 217 students at Hacettepe University. It has subscales such as depression, somatization, anxiety, obsessive-compulsive, phobic anxiety, interpersonal sensitivity, paranoid ideation, anger, hostility, and psychoticism. The correlation value was calculated as .42. (Kılıç, 1991). To ensure the collection of data that would allow for the most accurate analysis possible, participants who scored at medium or high levels on the SCL-90 were excluded

from the sample. The decision to implement this scale was a control measurement for the presence of comorbid psychopathology, which was an exclusion criterion of the study. The demographic information form was designed to facilitate the collection of participants' personal information, including age, gender, and marital status.

Data Analysis

300 people were included in the sample, and data were organized, and raw scores were converted to z-scores, and z-scores were evaluated in the range of greater than +1.98 or less than -1.98 before starting the analysis (Tabachnick & Fidell, 2007). Each scale contains plots consisting of randomly assigned items. These item parcels (or composite indicators) included in the analysis using the random assignment method, and this approach is supported by previous studies (Hu & Bentler, 1999). Moderation model is structured according to Bayesian Structural Equation model. The structure consisting of the parcels given above was then subjected to Confirmatory Factor Analysis (CFA), and the model fit indices were examined. In the CFA analysis, it was observed that some parcels remained significantly flat, and some of the scale items were eliminated within the framework of the model fit study. The variables were closely monitored throughout all the analyses until the model fit parameters of the CFA study took appropriate values. The values were CFI = .963, TLI = .958, SRMR = .0337, RMSEA = .028. The 95% confidence interval for RMSEA ranged from .0612 to .0860. The chi-square/df ratio was 1.23, which is significant at the $p < .001$ level (Browne & Cudeck, 1996; Hair et al., 2014).

Results

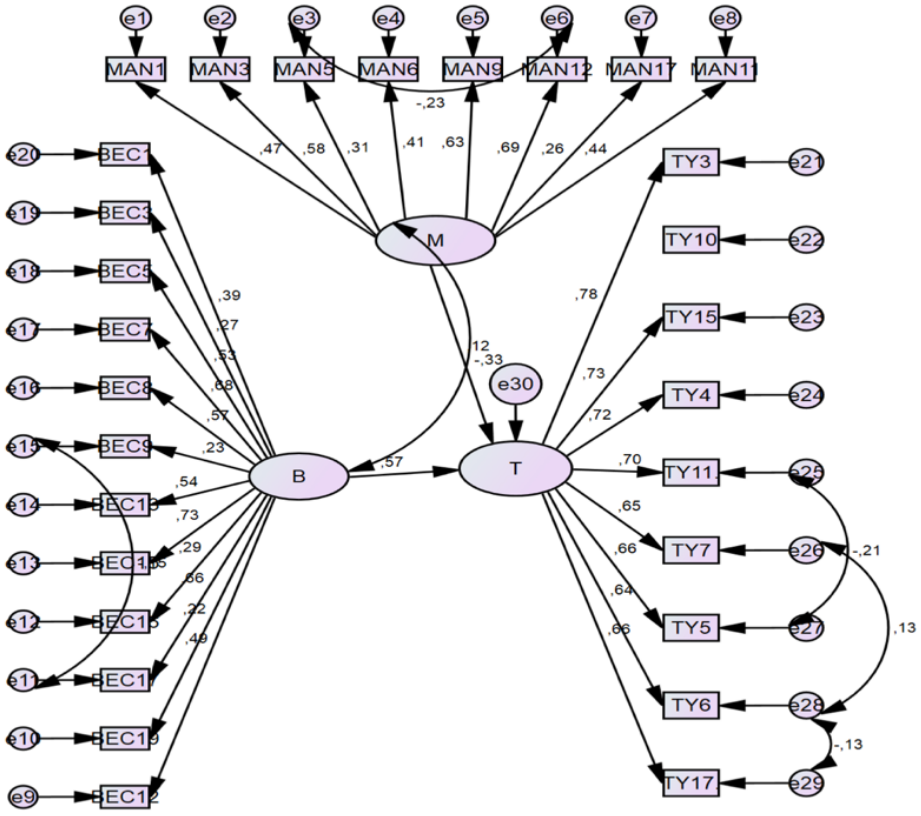
The reliability and principal component analyses of the Beck Depression Inventory (BDI), Spirituality Scale (MAN) and Binge Eating Disorder (BED) Binge Eating Disorder Scale were evaluated in terms of reliability coefficient and descriptive statistics using Nunnally's (1978) recommendation of alpha>.70 for acceptable internal consistency, and the scales met acceptable reliability conditions.

Confirmatory Factor Analysis (CFA)

As a result of confirmatory factor analysis (CFA), certain items were removed from the model due to low factor loadings, cross-loadings, or negative effects on model fit indices. Only items 2, 3, 4, 8, and 9 were retained in the model, while the remaining items (1, 5, 6, 7, 10–21) were removed in Beck Depression Inventory (BDI). Spirituality Scale also eliminated in the same way in which Items 1, 3, 6, 9, 11, 12, and 17 were retained, while the remaining items (2, 4, 5, 7, 8, 10, 13–16) were eliminated. Binge Eating Disorder Scale: Items 3, 4, 5, 6, 7, 10, 11, 15, and 17 remained in the model, while the other items (1, 2, 8, 9, 12–14, 16) were removed.

After this elimination process, there was a significant improvement was observed in model fit indices (CMIN/DF=1.232; RMSEA=,028; CFI=,963; TLI=,958), and the factor loadings of the scales became more consistent with the theoretical framework.

Figure 2.
Confirmatory Factor Analysis (CFA)



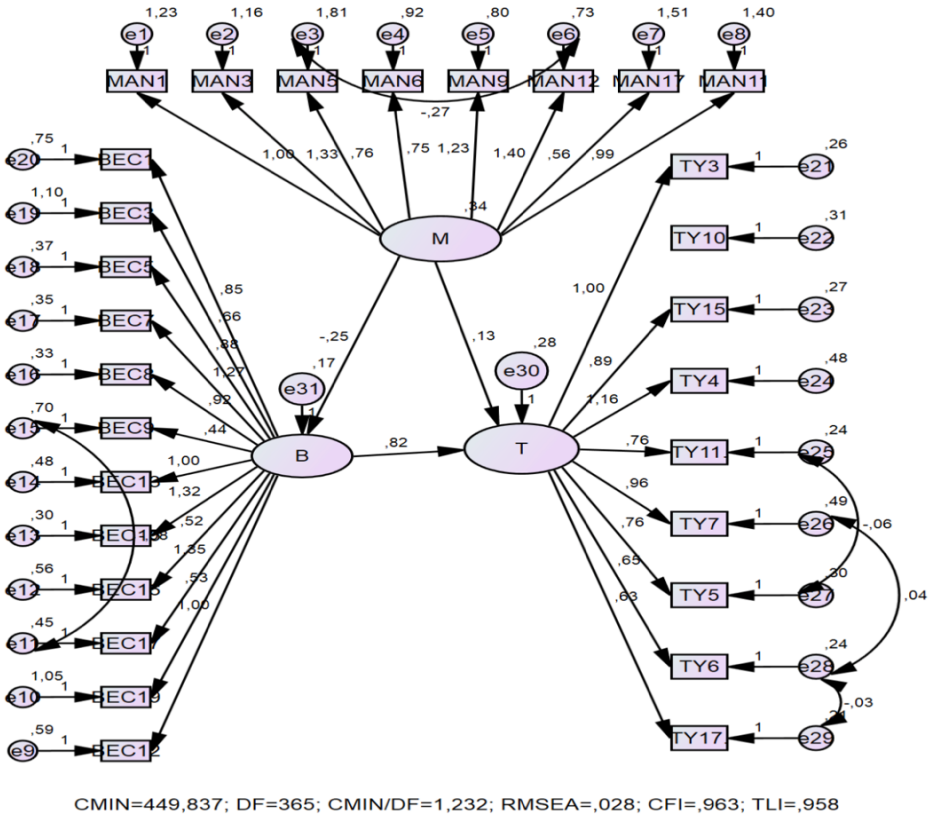
CMIN=449,837; DF=365; CMIN/DF=1,232; RMSEA=,028; CFI=,963; TLI=,958

A negative and statistically significant relationship was found between the depression and spirituality (r = -0.229, p < .001). This finding showed that depression symptoms decreased as individuals' spirituality levels increased, and this result can be interpreted as the protective effect of spirituality on psychological resilience. Similarly, a moderately positive and significant relationship was found between depression (BDI) and binge eating binge eating behavior (TY) (r = 0.477, p < .001). In other words, when the level of depression (BDI) increased, and individuals' binge eating tendencies also increased. The high level of positive correlation between the SCL-90-R depression subscale and BDI (r = 0.699, p < .001) showed that both scales cap-

tured similar structures in measuring depression and supports external validity. A low but significant negative relationship was observed between spirituality (MAN) and SCL-90-R depression score (r = -0.169, p = .003), whereas no significant relationship was observed between spirituality and binge eating (TY) (r = -0.007, p = .910). These results suggested that spirituality may play a protective role in depression, while depression may have an increasing effect on binge eating behavior and provided a conceptual ground for indirect effect analyses.

Structural Equation Model

Figure 3.
Structural Equation Model



The hypothesis tests were conducted within the scope of SEM, and the results showed that the effect of depression on binge eating was significant and positive (β = 0.573, t = 6.187, p < .001). This result showed that higher levels of depression were associated with higher levels of binge eating behavior (TY). In line with this finding, depression level was found to be a significant and positive correlate of BED. On the

other hand, the effect of spirituality on depression was significant and negative (β = -0.250, t = -3.701, p < .001). This suggested that individuals with high spiritual orientation might have lower depression levels, and it could be concluded as the level of spirituality could predict the level of depression negatively. However, the direct effect of spirituality on binge eating (TY) was not found to be statistically significant (β = 0.134, t = 1.894, p = .058). Therefore, the level of spirituality did not significantly predict the level of binge eating disorder directly. The findings indicated that spirituality might have an indirect effect on binge eating behavior (TY), and this effect might occur through depression.

Findings on the moderator role of Spirituality (MAN)

Table 2.
Moderating role of Spirituality (MAN) in the relationship between BDI and BED

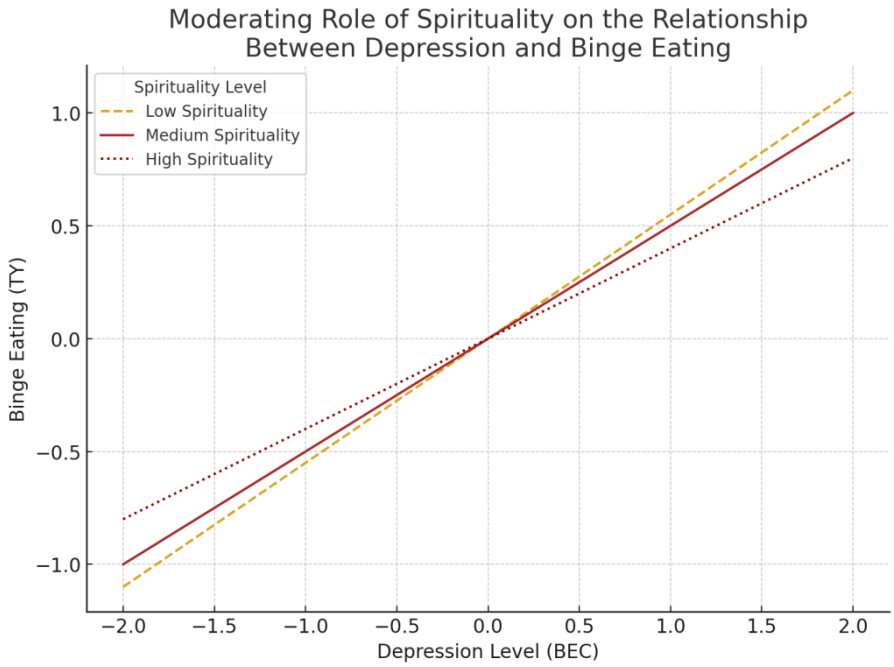
			95% Confidence Interval			
Variable	(β)	Std. Error	Lower	Top	Z	p
BDI	0.498	0.051	0.3343	0.4919	9.67	<.001
MAN	0.105	0.051	0.1521	0.2774	2.03	0.042
BDI * MAN	-0.106	0.049	0.0115	0.0552	-2.11	0.034

SE = Standard Error

According to Table 2, there was a positive and significant relationship between depression (BDI) and Binge eating disorder (BED) (β = 0.498, p < .001). This showed that the increase in depression significantly predicted binge eating behavior. In addition, the direct predictive effect of the Spirituality (MAN) variable was also positive and significant (β = 0.105, p = .042), which indicated that there might be an increase in binge eating behavior with the rise in the level of spirituality. However, the interaction term depression (BDI) * Spirituality (MAN) (β = -0.106, p = .034) was found significant. This result revealed that the level of spirituality (MAN) had a significant moderating effect on the relationship between BDI and BED. This negative interaction coefficient showed that the predictive effect of depression on binge eating decreased in individuals with high levels of spirituality; in other words, spirituality weakened this relationship. Spirituality played a moderating role in the relationship between depression (BDI) and binge eating disorder (BED).

Figure 4 showed that the moderating role of spirituality in the relationship between depression level and binge eating behavior. In other words, binge eating behavior changed in relation with the level of depression at three different levels of spirituality (low, medium, high). BED increased more significantly as depression increased in the group of low spirituality. However, level of depression decreased simultaneously in the decline on the level of BED in the subjects with high levels of spirituality. These findings showed that spirituality acted as a protective barrier in the development of BED. In other words, a high level of spirituality reduced the adverse impact

Figure 4.
Moderating role of spirituality in the relationship between BED and depression



of depression on eating behaviors and weakened this relationship. Thus, spirituality can be regarded as a critical component of psychological resilience which also might serve as a protective factor against the development of eating disorders.

Discussion

This section provides a comprehensive examination of the extant literature concerning the relationship between depression and BED. Hudson et al. (2007) reported that more than 50% of individuals diagnosed with BED had a had a major depression which aligns with the finding about the positive relationship between BED and depression. Coşkun-Efe (2022) and Ulfvebrand et al. (2020) also found that depressive symptoms served as triggers for choosing binge eating behaviors. Hambleton et al. (2022) also emphasized the impact of depression on a low rate of responsiveness to the treatment. Similarly Turan et al. (2015) and Yıldırım et. al. (2018) also found that depression was commonly related with emotional eating, and it significantly contributed to the chronicity of the disorder. Likewise, Altınyazar and Maner (2014) reported high prevalence rates of depression among individuals with eating disorders. In other words, depressive mood was treated as a contributing factor to the onset of binge eating episodes (Harrison et al., 2016; Leehr et al., 2015).

In summary it can be seen that there was a strong evidence that various psychopathologies, including mood disorders and personality disorders that can play a significant role in the course of eating disorders (Ekici, 2023). Nonetheless, Keçeli (2006) found a positive correlation between personality disorders and an elevated prevalence of eating disorders among female patients. Furthermore, the perception of distorted body image also played a pivotal role in the development of eating disorders (Aruguete et al., 2005; Ernst et al., 2021; Harrison et al., 2016; Kaçar, 2024; Leehr et al., 2015; Peleg et al., 2024). Moreover, interpersonal boundaries and the lack of meeting emotional needs in the families were also associated with the BED (Blomquist & Grilo, 2015; Ferriter & Ray, 2011). Therefore, the interaction between faith and culture should be considered carefully on the onset of BED. Similarly, research data from both Christian and Muslim communities similarly underscored the necessity of considering religious beliefs to interpret the etiology of eating disorders (Grenfell, 2006; Thomas et al., 2018). The relationship between the dissatisfaction of body image and depression also varied among individuals due to the influence of the sociocultural factors which played a significant role in the relationship between depression and eating disorders (Grilo et al., 2012; Linardon et al., 2019; Tayfur, 2018).

Spirituality played a moderating role in the relationship between depression and BED at statistically significant level although there was not a statistically meaningful direct correlation between spirituality and binge eating in this study. These findings aligned with the study of Akrawi et al. (2015) in which intrinsic religiosity and secure attachment to God are related with the lower levels negative body image. Beaulieu's (2022) study also emphasized the negative relationship between the disordered eating habits and religiosity are consistent with the data. Furthermore, Grenfell's (2006) also highlighted the the positive role of integration of body and mind via body-based spirituality on eating disorders. These findings underlined the critical role of spirituality on protecting psychological resilience, and it showed the positive effect of the relationship with God for emotional regulation about the body dissatisfaction.

However negative relationship with God also might result in adverse effects in the development of BED. Hill et al. (2000) found that religious belief may contribute to an increase in psychopathologies, and Mitra et al. (2023) emphasized the adverse impact of religion on eating disorders in case of spiritual struggle aligned with the data of this study. On the other hand, the effect of relationship with God on spirituality can vary in relation with the sociocultural context and demographic variables (such as different religions or Westernised culture) (Koç, 2010; Koenig et. al., 2012; Şirin & Dursun, 2021).

Ayten (2013) also examined the role of religion and spirituality to shape health behaviors, and it aligned the moderative effect of spirituality relationship between the depression and BED. It emphasized the normative aspect of the religion/spiritu-

ality on shaping healthy behaviors. Furthermore Tümen (2023) also highlighted that eating disorders could be manifested in different forms across different religions. In sum these findings indicated that spirituality should be included within the cultural context during the clinical assessment of BED.

Moreover, the present study identified a substantial negative correlation between depression and spirituality which is consistent with the data on the current body of the literature (Dein, 2014; Ilgaz, 2015). Bożek et al. (2020) and Long et al. (2024) explained this negative correlation via defining spiritualiy as a form of religious belief or sacred individual relationship which could provide a positive meaning in life, inner peace and a related aspects that support physical health for individuals. Özsoy (2020) also highlighted that stressfull life events could increase the level of depression but spirituality decrease the level of depression. Pargament also resonated these data and he emphasized that religion can provide a resource for coping with stressful life events. In other words, he pointed the significant impact of religious coping of religious coping with chronic stress for the prevention of psychological disorders. Indeed, Faraji and Firat (2022) also found the positive relationship between failure in emotional regulation and eating disorders which highlighted the critical role of emotional regulation in adapting stressful situations. Gross's (2014) theoretical model of regulation also emphasized the role of cognitive re-appraisal to emotional regulation and individuals can use religious resources as re-appraisal mechanisms of stressful circumstances. However, individuals also may choose more hedonistic resources to regulate emotions to cope with stress such as emotional eating, shopping or gambling. These decisions may be affected by behaviors acquired through familial upbringing or by the influence of media on prevailing trends. Similarly, Göker (2023) emphasized the significant role of attachment to parents, and Tetzlaff et al. (2016) highlighted the level of family functionality on the development of BED. In other words, sociocultural factors also played a moderating role in spirituality, depression, and BED. Although there was not so many studies about the binge eating disorders, existing body of the literature showed a positive reliatonship between BED and mood disorders. Depression was regarded as one of the critical risk factors for the chronicity of BED. Therefore, it is significant to examine the effects emotional regulation strategies on the treatment of BED.

Conclusion

This study examined the moderating effect of spirituality on the relationship between BED and depression, and the results showed that there was a negative correlation between spirituality and symptoms of depression. In other words, spirituality functioned as a protective element for prevention of BED via decreasing the level of depression. In other words, the positive correlation between BED and depression indicated the role of emotional regulation to prevent emotional eating as a coping

mechanism. However demographic variables or different sociocultural varaiables may also play a role in regulation of emotion as as Gross (2014) identified the role of the role of different resources in adapting stressful circumstances.

However, it is striking that there was not a statistically significant relationship between spirituality and BED. This finding suggested that the possibility of an indirect association between spirituality and BED. In other words, spirituality decreased the level of depression, thus it was expected to decrease on the level of BED due to the decreased level of depression. In other words, individuals with low levels of spirituality manifested higher levels of depression and their tendency to show binge eating behavior also increased. This result showed that spirituality functioned as a protective barrier to prevent the likelikood for choosing hedonistic coping methods such as emotional eating, shopping or gambling. In sum, spirituality provided sources depend on the subjective nature of relationship with God which in turn helped them manage their thoughts in either way. Cognitive and spiritual re-appraisal of situation resulted in emotional regulation and decreased likelihood to choose binge eating as a coping mechanism in difficult situations. In other words, a moderating role of spirituality on the relationship between depression and BED could be interpreted as a source for reframing the negative image of the body or associated cognitive distortions in the course of BED. Therefore, it is important to include spirituality to improve treatment models of BED that are sensitive to cultural context.

In conclusion, spirituality indirectly affected BED with lower level of depression, and it showed that a positive relationship with spirituality might contribute to emotional regulation and psychological resilience in the course of eating disorders. Despite the several studies posited the potential negative effects of religious beliefs on mental health, the present study supported the protective role of spirituality if the personal relationship with the divine was positive. These findings emphasized the necessity of addressing spirituality as a relevant psychosocial factor in understanding the etiology of eating disorders and depression. Moreover, this study encouraged the development of culturally sensitive approaches that incorporate spirituality into mental health frameworks.

Limitations and Recommendations

The size of sample is modest so it can be extended with more individuals, and the limitation of the number of the participants may cause restriction on the reliability of the data. Furthermore, the sample of this study consisted of only young adults, so another research can be constructed with individuals at different life spans such as late adulthood, or adolescence period. Although the body of the literature about BED was manifested in females, density on the level of the females in the sample of this study might also restrict the generalizibility of the data on male populations. Therefore, the effect of spirituality on the relationship between BED and depression can be studied

in various types of populations such as refugees, employees, or different religious bakcgrounds. The sample consists of Turkish university students, so this study can be replicated in cross-cultural settings. Moreover, experimental designs can be applied via controlling any confounding variables. Longitudinal studies are also recommended to delve into the interplay between spirituality, mood disorders or eating disorders.

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Authors' contribution. Conceptualization, A.K. and B.A.; methodology A.K. and B.A.; data analysis, B.A.; writing—original draft preparation B.A.; writing—review and editing A.K..; visualization B.A.; All authors have read and agreed to the published version of the manuscript.

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