Clinical Research

Türk Fen ve Sağlık Dergisi Turkish Journal of Science and Health

Volume 4 Number 3 Year 2023 Pages 210-220

<u>e-ISSN: 2717-7173</u> <u>https://dergipark.org.tr/tr/pub/tfsd</u>

The Mediating Effect of Offence-related Feelings of Shame and Guilt on the Relationship between Sense of Coherence and Emotional Eating in Adult Women

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ABSTRACT:

Purpose: The aim of this study was to examine the mediating effect of offence-related feelings of shame and guilt on the relationship between the sense of coherence and emotional eating in adult women.

Material and Methods: The study was carried out in descriptive-relational design. The population of the research consisted of 543 adult women who met the criteria for inclusion in the research. A Introductory Information Form, Sense of Coherence Scale (SOC), Emotional Eater Questionnaire (EEQ) and Offence-Related Shame and Guilt Scale (ORSGS) were used to collect data.

Results: SOC mean score was 53.35 ± 8.17 , EEQ mean score was 10.32 ± 5.90 , and ORSGS mean score was 41.10 ± 12.11 . It was determined that there was a weak statistically significant and positive correlation and between EEQ and ORSGS mean scores. It was determined that there was a weak, statistically significant and negative correlation between the SOC and the EEQ mean scores, and a weak, statistically significant and negative correlation between the SOC and the ORSGS mean scores (p<0.05). 6.9% of Adult women's ORSGS scores are explained by EEQ and 9.5% of SOC scores are explained by EEQ and ORSGS.

Conclusion: It is seen that offence related shame and guilt moderately mediate the relationship between the sense of coherence and emotional eating in adult women. At the same time, the sense of coherence in women has a direct predictive effect on emotional eating. The results of the study draw attention to the importance of emotional eating behavior and expressions of offence-related shame and guilt in protecting and maintaining health.

Keywords: Adult women, Emotional eating, Sense of coherence, Shame, Guilt

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INTRODUCTION

People develop emotional eating behavior as a reaction to the negative situations they experience. Emotional eating behavior occurs as a result of eating to control mood, although the individual does not feel hungry due to negative emotions (Konttinen, 2012). This is a situation that can be seen in individuals with normal weight or obesity, as well as in dieters (Sevinçer and Konuk, 2013). The person may encounter problems such as gaining excess weight by eating more than the amount of food, and in this process, he/she may resort to restrictive diets

frequently and experience various problems such as regaining weight afterwards. Emotional eating is a common problem in eating disorders, but it can also occur without an eating disorder. Emotional eating or psychological eating behavior is an inappropriate solution that a person resorts to for reasons such as avoiding problems, avoiding distressing situations, and coping with negative emotions, even though there is no real hunger. Although the distressed situation decreases for a while with the feeling of pleasure, the feelings of shame and guilt experienced afterwards may occur in individuals. As

a result of the study by Tetik (2019), it was stated that as emotional eating behavior increases, the feeling of shame also increases. It has been stated that coping with stress through emotional eating behavior is insufficient. Hasking (2006), on the other hand, found that avoidant coping and emotionfocused coping strategies are associated with eating disorders. It is thought that the sense of coherence will contribute to coping effectively with stressors. A sense of coherence can be defined as a way of seeing life and the ability to successfully manage the many stressors encountered in the course of life (Eriksson, 2017). A sense of coherence is a resource that enables people to manage tension, think about their internal and external resources, identify and activate those resources, encourage effective problem solving, and release tension in a health-promoting way (Eriksson, 2007). Antonovsky draws an important distinction between stress and tension. Antonovsky named negative life situations that we encounter in daily life as stressors (Eriksson and Lindstrom, 2006). These stressors encountered in daily life cause a person to develop a wide range of reactions in the emotional spectrum, from anger to joy, from the grieving process to acceptance. Reactions to events are related to the person's reaction to the situation. The variety of strategies developed makes it easier to deal with the situation (Bağ, 2017). When we look at the studies on emotional eating and stress, it has been stated that women eat more when they are stressed (Konttinen et al., 2010; Van Blyderveen et al., 2016). Tan and Chow (2014) stated in their study that individuals who experience high levels of stress have a very low ability to regulate their eating behaviors. This lack of ability to regulate eating behavior has also been directly associated with emotional eating (Tan and Chow, 2014). A strong sense of coherence helps to mobilize resources in eating behavior to cope with stressors and successfully manage tension. Thanks to this mechanism, the sense of coherence helps to protect the health of the person and to ensure its continuity (Mittelmark and Bauer, 2017). In the literature, the effects of a sense of coherence on emotional eating and feelings of offence-related shame and guilt. No studies were found in which the effect was examined in depth. The aim of this study

was to examine the mediating effect of offencerelated shame and guilt on the relationship between a sense of coherence and emotional eating in adult women.

Hypotheses

H₁: There are statistically significant negative correlations between the sense of coherence, emotional eating, and the levels of offence-related shame and guilt in adult women.

 H_2 : There are statistically significant positive correlations between emotional eating and the levels of offence-related shame and guilt in adult women.

 H_3 : In adult women, the relationship between a sense of coherence and emotional eating is mediated by offence-related shame and guilt.

MATERIAL and METHODS Purpose and Type of the Study

The research was carried out as a descriptiverelational study to investigate the mediating effect of offence-related shame and guilt on the relationship between a sense of coherence and emotional eating in adult women by establishing structural equation modelling.

Sampling and Participant

The population of the research consisted of women who agreed to participate in the study online via Google forms in a city in the Central Anatolia region of Turkey. Considering the R2 value of the model in the study conducted by Oliveira et al. (2017) in line with the literature, the sample of the study was determined as 95% confidence (1- α), 95% test power (1- β), f^{2=0.047} effect size and the number of samples to be taken was 530 people. The sample of the study consisted of 543 people who met the criteria for inclusion in the study. As a result of the study, the power of the test was found to be 95.6%.

The study included women aged 18 and over, living in a province of the Central Anatolian region of Turkey, without any psychiatric or physical disorders, gastrointestinal disorders, or any chronic disease, using smartphones and social media, and confirming the informed consent form. The data of the study were collected online between 1 May 2021 and 15

February 2022. Considering the possibility of being missing, a total of 650 people were invited to the study. Among these individuals, 543 people agreed to participate in the study.

Data Collection Tools

Introductory information form: The introductory information form consists of 15 questions in total, including sociodemographic data on age, height, weight, educational status, marital status, income status, employment status, and weight assessment. Sense of coherence scale (SOC-13): The scale was developed by Antonovsky (1987) and it is a selfrating scale consisting of 13 items ranging from 1 to 7. The scale was adapted to the Turkish language by Scherler and Lajunen (1997) and it was reported that it had a three-factor structure (understandability, manageability, significance). Scale items are Likert type scored from 1 to 7. The scale allows getting total scores as well as subscale scores. The total SOC score ranges from 13 to 91. High scores on the scale indicate that the person has a high sense of coherence. In the reliability study of the scale, internal consistency coefficients were determined as 0.69 for the whole scale. In this study, Cronbach's alpha coefficient of the total sense of coherence was 0.60.

The emotional eater questionnaire (EEQ): It was developed to evaluate the emotional eating behaviors of obese and overweight people (Garaulet et al., 2012), and its validity and reliability in Turkish were made by Arslantaş et al. (2020). The Emotional Eating Scale consists of 10 items and three subdimensions (disinhibition, type of food, guilt) and is answered on a 4-choice Likert-type scale. There is no reverse item on the scale. The lowest "0" and the highest "30" points are taken from the scale. High scores on the scale indicate a high level of emotional eating behavior. The internal consistency coefficients of the scale, which were created according to the factors, were found to be 0.81 for the disinhibition, 0.57 for the type of food, 0.64 for the guilt, and 0.84 for the whole scale. In our study, the total Cronbach's Alpha coefficient was found to be 0.88.

The offence-related shame and guilt scale (ORSGS): The original scale was developed by Wright and Gudjonsson (2007). Its validity and reliability in Turkish were done by Sarıçam, Akın, and Çardak (2012). The scale consists of 10 items and has a 7point Likert type rating. The scale has two subdimensions: guilt and shame. The lowest "10" and the highest "70" points are taken from the scale. As the scores obtained from the shame and guilt dimensions of the Offence-Related Shame and Guilt Scale without an inverted item increase, it can be said that the individual has the characteristics of the relevant dimension at a higher level. Internal consistency reliability coefficients were found to be .78 for the shame subscale and .70 for the guilt subscale. In our study, the Cronbach's Alpha coefficients were found to be .82 for the shame subscale, .59 for the guilt subscale, and 0.83 for the total.

Data Collection

Data forms were sent via Google Forms and women who met the inclusion criteria were asked to fill in. An "Informed Consent Form" was added to Google Forms and the voluntary consent tab was made mandatory. The invitation to fill out the survey was sent via WhatsApp groups and emails.

Statistical Analysis

AMOS 26.0, SPSS 25.0 (IBM Corp., Armonk, New York, USA) package software and the PROCESS macro, which is an add-on of this software, were used in the analysis of the research data. In the study, the upper limit of the error value for statistical significance was determined as .05. Moreover, a descriptive analysis of the research variables was made after frequency and percentage analysis regarding the demographic information of the participants. In the examination of the relations between the variables, it was examined whether the variables, which are the hypothetical criteria for the use of parametric techniques, meet the normality assumption. It was observed that the variables showed normal distribution according to the kurtosis and skewness coefficients and the coefficient of variation. Relationships between research variables were analyzed with Pearson product-moment correlation coefficient. For the use of regression analysis, linear scattering was observed between the

variables. Furthermore, path analysis was performed within the framework of structural equation modelling (SEM) to determine the direct and indirect predictive power of the independent variable on the dependent variable. CMIN/DF, RMSEA, CFI, GFI and AGFI fit indices were used to evaluate the path analysis model fit. Besides, Conditional Process Analysis was used to analyze the hypothesis model of the research. Conditional Process Modeling is a new approach that can handle mediation and regulation analyses together, and can include constrained situations before and after variables that affect each other (Hayes, 2018). Besides, the analyzes of the multi-mediation effect in the research were made using the PROCESS macro (Model 4) developed by Hayes (2018). In data analysis, Bootstrap was performed on 5,000 samples.

Ethical Approval

In order to conduct the research, approval (21/36-21.04.2021) from the Social and Human Sciences Ethics Committee of a university was obtained.

RESULTS

The distribution of adult women by descriptive characteristics is given in Table 1. The mean age of the women participating in our study was 32.78 ± 11.79, 60.8% of them were undergraduate graduates, 57.8% were married, 61.3% had medium income, 64.3% were unemployed, and 82.7% of them had a nuclear family. The body mass index of 51.2% of the women was normal, 43.5% of them considered themselves a little overweight in terms of weight, 39% were less satisfied with their current weight, 33% have not been on a diet to lose weight until now, % 72.9 of them stated that they have not been on a diet for the purpose of gaining weight, and 81.6% of them have not used a product with a laxative effect for weight loss. In addition, 55.4% reported that they tend to eat during stressful periods. The mean, standard deviation and correlation values of adult women's Sense of Coherence Scale, Emotional Eater Scale, the Offence-Related Shame and Guilt Scale and the other variables are given in Table 2. It was determined that there was a weak statistically, significant and positive

correlation between age and SOC (r=0.215; p<0.05), and between EEQ and ORSGS mean scores (r=0.263; p<0.05). It was determined that there was a weak, statistically significant and negative correlation between the SOC and the EEQ mean scores (r=-0.222; p<0.05), and a weak, statistically significant and negative correlation between the SOC and the ORSGS mean scores (r=-0.264; p<0.05).

The structural equation modelling formed between the Feeling of Coherence Scale, the Emotional Eater Scale, and the Offence-Related Shame and Guilt Scale are given in Figure 1. In addition, the results of the analysis of the Sense of Coherence Scale, the Emotional Eater Scale, Offence-Related Shame and Guilt Scale and their sub-dimensions are given in Table 3. First of all, it was examined whether the measurement model was significant for each subdimension. The effect of the Sense of Coherence Scale on the Emotional Eater Scale was found to be statistically significant (β =-0.257; p<0.001). The effect of the Emotional Eater Scale on the Offence-Related Shame and Guilt Scale was found to be statistically significant (β =0.206; p<0.001). The effect of the Sense of Coherence Scale on the Offence-Related Shame and Guilt Scale was found to be statistically significant (β =-0.309; p<0.001). At the same time, the path coefficients belonging to all the items under each dimension were found to be statistically significant. When the fit values were examined, it was obtained as CMIN= 43,017, DF= 17, CMIN/DF= 2.530, RMSEA= 0.053, CFI= 0.977 and GFI= 0.981. All of the compliance criteria were obtained within the desired limits. While SOC predicts 6.6% of EEQ, EEQ and SOC predict 17.1% of Moreover, SOC explains 53.8% ORSGS. Comprehensibility, 26.7% of Manageability, and 21.5% of Meaningfulness. Besides, EEQ predicts 84% of Disinhibition, 46.4% of Type of Food, and 47.5% of Guilt Feeling. Moreover, ORSGS explains 42.7% of Guilt and 96.4% of Shame.

Table 4 shows the mediating role of the Offence-related Shame and Guilt Scale in the effect of the Emotional Eater Scale on the Sense of Coherence Scale. Moreover, the path coefficient between EEQ and ORSGS was statistically significant (β =0.540; p<0.001). The direct effect between EEQ and SOC was statistically significant, and a one-unit increase

in EEQ causes a 0.227-unit decrease in SOC (β =-0.227; p<0.001). Path coefficient between ORSGS and SOC was significant (β =-0.149; p<0.001). When the indirect effect was examined, it was observed that the effect was 0.080 and the 95% confidence interval obtained with the Bootstrap technique did not contain the zero value, and it was determined

that the indirect effect was significant. The fully standardized indirect effect was obtained as -0.058 (-0.094: -0.028). With this result, the mediating role of ORSGS was found to be moderate. Furthermore, 6.9% of Adult women's ORSGS scores are explained by EEQ and 9.5% of SOC scores are explained by EEQ and ORSGS.

Table 1. Distribution of Adult Women by Descriptive Characteristics (n=543)

Characteristics				
Age (Mean ± SD)	32.78 ± 11.79			
Educational status	n	%		
Literate	7	1.3		
Primary school	62	11.4		
Secondary school	16	2.9		
High school	83	15.3		
Bachelor's degree	330	60.8		
Postgraduate	45	8.3		
Marital status				
Married	314	57.8		
Single	229	42.2		
Income status				
Very bad	7	1.3		
Bad	34	6.3		
Middle	333	61.3		
Good	157	28.9		
Very good	12	2.2		
Working status				
Not working	349	64.3		
Public sector	131	24.1		
Private sector	54	9.9		
Retired	9	1.7		
Family structure				
Nuclear family	449	82.7		
Extended family	50	9.2		
Broken family	23	4.2		
Alone	21	3.9		
Body mass index				
Weak	14	2.6		
Normal	278	51.2		
Fat	152	28.0		
Obese	99	18.2		
Emotional eating states according to emotional eating scores		20:2		
Not emotional eater	126	23.2		
Low emotional eater	187	34.4		
Emotional eater	196	36.1		
Very emotional eater	34	6.3		
Self-assessment in terms of weight	J .	0.5		
Too weak	8	1.5		
A little weak	35	6.4		
At normal weight	221	40.7		
A little fat	236	43.5		
Very fat	43	7.9		
Satisfaction with current weight	75	7.5		
I am not satisfied at all	151	27.8		
I'm less satisfied	212	39.0		
I am satisfied	148	27.3		
I am very satisfied	32	5.9		

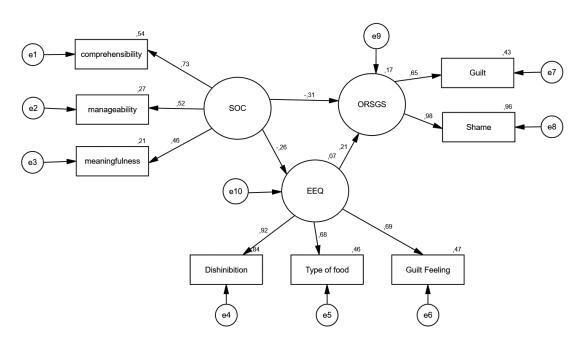
Table 1. Distribution of Adult Women by Descriptive Characteristics (n=543) (continued)

The status of dieting for weight loss / slimming to	date	
Never	179	33.0
Rarely	127	23.4
Sometimes	123	22.7
Often	92	16.9
Always	22	4.1
The status of dieting for the purpose of gaining we	ight / getting fat to date	
Never	396	72.9
Rarely	62	11.4
Sometimes	50	9.2
Often	29	5.3
Always	6	1.1
The status of using any drug, food, product, etc. wi	th a laxative (laxative) effect for weight loss / slimming	ourposes.
Never	443	81.6
Rarely	54	9.9
Sometimes	37	6.8
Often	6	1.1
Always	3	0.6
Inclination to eat during stressful times		
Yes	301	55.4
No	242	44.6

Table 2. The mean, standard deviation and correlation values of the Feeling of Coherence Scale, the Emotional Eater Scale, the Offence-Related Shame and Guilt Scale and the other variables (n=543)

Variables	Mean ± SD	1	2	3	4
1. Age	32.78 ± 11.79	-			
2. SOC	53.35 ± 8.17	0.215**	-		
3. EEQ	10.32 ± 5.90	-0.051	-0.222**	-	
4. ORSGS	41.1 ± 12.11	-0.054	-0.264**	0.263**	=

Pearson correlation coefficient was used. SOC: Sense of Coherence Scale; EEQ: The Emotional Eater Questionnaire; ORSGS: The Offence-Related Shame and Guilt Scale.*p<0.05, **p<0.01



CMIN=43,017;DF=17; p=,000; CMIN/DF=2,530; RMSEA=,053; GFI=,981; AGFI=,960; CFI=,977; TLI=,961

Figure 1. Structural equation modelling between the Sense of Coherence Scale, the Emotional Eater Scale, and the Offence-related Shame and Guilt Scale.

Table 3. Analysis results of the Sense of Coherence Scale, the Emotional Eater Scale, and the Offence-Related Shame and guilt Scale and their sub-dimensions

			βº	β¹	SH	Test Stat.	р	R ²
EEQ	<	SOC	-0.257	-0.496	0.121	-4.110	<0.001	0.066
ORSGS	<	EEQ	0.206	0.433	0.100	4.323	<0.001	0.171
ORSGS	<	SOC	-0.309	-1.254	0.255	-4.929	<0.001	0.171
Comprehensibility	<	SOC	0.734	1.526	0.226	6.747	<0.001	0.538
Manageability	<	SOC	0.517	0.926	0.133	6.969	<0.001	0.267
Meaningfulness	<	SOC	0.463	1.000				0.215
Disinhibition	<	EEQ	0.917	1.000				0.840
Type of Food	<	EEQ	0.681	0.272	0.019	14.424	<0.001	0.464
Guilt Feeling	<	EEQ	0.689	0.274	0.019	14.537	<0.001	0.475
Guilt	<	ORSGS	0.654	0.503	0.070	7.172	<0.001	0.427
Shame	<	ORSGS	0.982	1.000				0.964

 β^0 : Standardized Coefficient; β^1 : Non-standardized Coefficient; SE: Standard Error; R^2 : Explained variance; SOC: Sense of Coherence Scale; EEQ: The Emotional Eater Questionnaire; ORSGS: The Offence-Related Shame and Guilt Scale.*p<0.05, **p<0.01

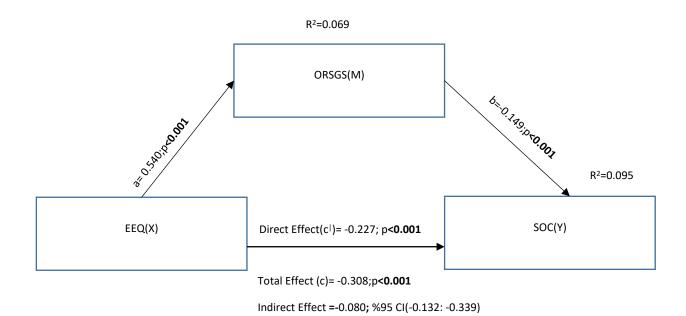


Figure 2. The mediating effect model of the Office-related Shame and Guilt Scale in the effect of the Emotional Eater Scale on the Sense of Coherence Scale

Table 4. The mediating role of the Offence-related Shame and Guilt Scale in the effect of the Emotional Eater Scale on the Sense of Coherence Scale

			ORSGS				SOC	
		β	SE	р		β	SE	р
EEQ	a	0.540	0.085	<0.001	cl	-0.227	0.059	<0.001
	Constant	35.535	1.013	<0.001				
ORSGS		***	***	***	b	-0.149	0.029	<0.001
					Constant	61.813	1.220	<0.001
R2			0.069				0.095	
Total Effect (c)= -0.308; p< 0.00 1	L						
Indirect Effec	ct = -0.080; %95 CI	(-0.132:-0.039)						

β: Standardized Coefficient; SE: Standard Error; SOC: Sense of Coherence; EEQ: The Emotional Eater Questionnaire; ORSGS: The Offence-Related Shame and Guilt Scale.*<0.001

DISCUSSION

It has been reported that women are more prone to emotional eating and eating under stress and gain weight (Thompson and Romeo, 2015). The findings of the study conducted to examine the mediating effect of offence-related shame and guilt on the relationship between the sense of coherence and emotional eating in adult women were discussed within the scope of the literature. It has been stated that it will be possible to successfully cope with the numerous and complex stressors encountered throughout life with a sense of coherence (Ando and Kawano, 2018). In the study, the mean SOC score of women was found to be 53.35 ± 8.17. According to this score, it can be said that women's sense of coherence was at a moderate level. This result is similar to the research result in the literature (Ferguson et al., 2016). In this study, it was determined that as the age of the women increased, the level of sense of coherence also increased. Similar to our study, there is study in the literature dealing with this relationship (Fusz and Tóth, 2017). The increase in the sense of coherence as the age increases can be explained by the fact that the life experiences of women contribute to the increase in their level of coping with stress, which in turn affects the sense of coherence positively. Emotional eating occurs in response to psychological and emotional states such as fear and anxiety (Serin and Şanlıer, 2018). In this study, the mean EEQ score of women was found to be 10.32 ± 5.90. According to this score, it can be said that women were emotional eaters at a low level. In addition, it was determined in the study that 47% of women were emotional eaters. Similar results were obtained with the study conducted on students (Işık and Cengiz, 2020; Arslantas et al., 2021). It can be said that women are at risk for emotional eating.

Guilt and shame are self-conscious emotions that result from negative self-evaluation (Bockers et al., 2016). In this study, the mean ORSGS score of women was found to be 41.10 ± 12.11 . According to this average score, it can be said that the ORSGS scores of women were at a moderate level. It can also be said that the tendency of women to evaluate themselves negatively in their lives is high. Shame is thought to exacerbate the cycle of eating

psychopathology by stimulating pathological eating behaviors (Pinto-Gouveia et al., 2014). In this study, it was determined that as the emotional eating scores of women increased, offence-related shame and guilt scores increased. Besides, 6.9% of adult women's ORSGS scores are explained by EEQ. The literature on eating disorders reports that shame or guilt (or both) play a role in women's disordered eating habits (Craven and Fekete, 2019; Tetik, 2019; Brockdorf et al., 2020; Dias et al., 2020; Mendia et al., 2021). This study also explains 42.7% of ORSGS Guilt and 96.4% of Shame. It can be said that ORSGS reveals the feeling of shame the most. Moreover, it can be said that the individuals who try to ignore their shame with emotional eating behavior also try to suppress their shame and guilt with eating behavior. Feelings of shame and guilt are defined as situations that cause distress and stress resulting from personal mistakes (Bockers et al., 2016). When the literature was examined, studies examining the sense of coherence and offence-related shame and guilt could not be found. In the study, it was determined that as the sense of coherence scores decreased, offence-related shame and guilt scores increased. With this result, it can be said that when women cannot cope effectively with the stressors in life, their feelings of offence-related shame and guilt increase.

In the study, it was determined that as women's SOC scores increased, their EEQ scores decreased. At the same time, as a result of this study, it was determined that the sense of coherence explained 6.6% of emotional eating. This is the first study to address emotional eating and sense of coherence in adult women without chronic diseases. Similar results were obtained in studies conducted with individuals with eating disorders (Dalley et al., 2020; Vagedes et al., 2021). In addition, the eating behaviors of students without chronic diseases were evaluated with different measurement tools and similar results were obtained with our study (Horiguchi et al., 2016; Kato et al., 2019). In a qualitative study conducted with female university students, it was stated that the trigger of emotional eating behaviors was stress (Bennett et al., 2013). A strong sense of coherence helps mobilize resources to cope with stressors and successfully manage

tension. Thanks to this mechanism, the sense of coherence helps to protect the health of the person and to ensure its continuity (Mittelmark and Bauer, 2017). With the development of a sense of coherence, stress formation can be reduced and emotional eating can be prevented. The mediation model in our study reveals that offence-related shame and guilt moderately mediate relationship between the sense of coherence and emotional eating in adult women. By reducing women's feelings of offence-related shame and guilt, their sense of coherence can be activated, which can reduce emotional eating. Furthermore, the sense of coherence in women has a direct predictive effect on emotional eating. This study showed that the sense of coherence in women contributed positively to emotional eating, which is consistent with the results of previous studies in different groups (Horiguchi et al., 2016; Dalley et al., 2020; Vagedes et al., 2021). No similar study was found in the literature with our study. A sense of coherence is the ability to obtain and use various resources more effectively. When women are able to deal effectively with stressful situations in their lives, negative self-evaluations such as offence-related shame and guilt decrease.

As a result of the research, it is seen that offence related shame and guilt moderately mediate the relationship between the sense of coherence and emotional eating in adult women. At the same time, the sense of coherence in women has a direct predictive effect on emotional eating. The results of the study draw attention to the importance of emotional eating behavior and expressions of offence-related shame and guilt in protecting and maintaining health. Women need interventions to improve the senese of coherence. This study reveals the effect of emotional eating on emotions. Nurses, especially psychiatric nurses, can take a leading role in defining the negative emotions of women, determining the problems caused by their coping styles and behaviors, helping individuals to use their resources effectively, and protecting and maintaining health by providing holistic care.

Limitations

Limitations of this study; the use of self-report questionnaires is limited to women in one city of a particular region. It is recommended to study in larger sample groups for the generalizability of the results.

Acknowledgements

Thanks for all the researchers and participants in this study.

Conflict of Interest

No potential conflict of interest was reported by the authors.

Funding

The author(s) reported there is no funding associated with the work featured in this article.

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