

ORIGINAL ARTICLE

# *The impact of rumination on life satisfaction of hotel employees during the COVID-19 pandemic: the mediating role of fear of COVID-19 and the moderating role of sedentary lifestyle*

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## BACKGROUND

It is important to determine the individual factors that cause the differentiation of negative reactions of individuals due to epidemics. The purpose of this study is to investigate the moderating role of a sedentary lifestyle and the mediating role of fear of COVID-19 on the relationship between rumination and life satisfaction. Intense rumination is known to have a negative impact on individuals' life satisfaction levels. Very little is known about variables that may mediate and moderate this relationship.

## PARTICIPANTS AND PROCEDURE

The study was conducted with staff members of five-star accommodation establishments in Turkey. Data were collected with a quantitative research method via questionnaires, completed by 386 full-time employees.

## RESULTS

The results show that rumination negatively affects life satisfaction, and fear of COVID-19 has a mediating role

between rumination and life satisfaction. In addition, the study concluded that a sedentary lifestyle moderated the indirect effect of rumination on life satisfaction through fear of COVID-19. This finding indicates that the negative impact of rumination on life satisfaction, mediated by fear of COVID-19, decreased, as the active lifestyle level of employees increased.

## CONCLUSIONS

The results indicate the importance of active lifestyles in reducing negative impacts of the fear of being infected with a disease during times of crisis such as outbreaks and ruminative thoughts on lifestyle. The findings of this study provide substantial contributions with respect to how outbreak-related negative reactions occur and differ.

## KEY WORDS

rumination; fear of COVID-19; life satisfaction; sedentary lifestyle; hospitality employees

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## BACKGROUND

Hotel employees are often at higher risk of COVID-19 infection due to working in environments that involve direct contact most of the time (Vo-Thanh et al., 2022). As the risk of contracting an infectious disease due to working conditions in a sector increases, it will also negatively impact the mental health of employees (Khalid et al., 2016). Thus, it is inevitable for hotel employees to suffer mental health problems after facing situations of unease and anxiety (Luhmann et al., 2012; Polizzi et al., 2020). The psychological well-being of employees, who are critical actors in service quality and customer satisfaction in hospitality sectors, is more important than ever during times of crisis such as an outbreak (Nicola et al., 2020). Therefore, investigating the psychological impact of an outbreak on employees is critically important. In this context, there are very few studies on how reactions to fear of COVID-19 differ among individuals (Killgore et al., 2020), despite the existence of studies, the majority of which found that COVID-19 leads to depression, anxiety, unease and low levels of life satisfaction (Ahorsu et al., 2020; Soraci et al., 2020).

Often described as a reaction to stressful events in life, rumination is associated with a number of psychological problems, specifically with depressive moods (Bugay & Baker, 2011; Papageorgiou & Wells, 2004). Rumination causes the individual to make negative inferences after a stressful event and to frequently repeat these negative thoughts (Ogińska-Bulik, 2017). From this perspective, rumination is significant in determining the negative reactions of individuals due to outbreaks, as well as the individual factors causing such reactions to differ (Smith & Alloy, 2009). Previous studies show that rumination is positively linked with variables such as anger (Rusting & Nolen-Hoeksema, 1998), self-pity (Stöber, 2003), and aggressive responses (Bushman, 2002), and negatively linked with variables such as empathy (Burnette et al., 2009) and problem-solving (Ward et al., 2003).

While the negative impact of intensive rumination on life satisfaction is known, the same cannot be said for variables that may moderate and mediate this relationship. Therefore, the moderated mediation model was tested in this study to probe the relationship between rumination and life satisfaction. The purpose of this study is to investigate the mediating role of fear of COVID-19 and the moderating role of sedentary lifestyle on the relationship between rumination and life satisfaction. In other words, the study tested the moderating effect of sedentary lifestyle on the indirect impact of rumination on life satisfaction as mediated by fear of COVID-19. The study also sets forth theoretical and practical recommendations as to what should be done to preserve the psychological well-being and levels of life satisfaction of employees

in the hospitality sector, hence filling the gap in the literature on this subject.

## THE EFFECTS OF RUMINATION ON LIFE SATISFACTION

Identifying the factors that impact individuals' life satisfaction is important to protect mental health. One of the factors that negatively affects life satisfaction is rumination (Ysseldyk et al., 2007). Rumination is characterized by repetitive thoughts about memories of negative events (Nolen-Hoeksema et al., 2008). Ruminating thoughts often focus on the upsetting experiences of the individual, negatively affecting one's mental health (Öcalan & Üzar-Özçetin, 2020). Thus, rumination is considered an important risk factor for life satisfaction. Individuals with a higher tendency to ruminate are likely to perceive their circumstances in a more negative light, which is why they are more likely to have a more pessimistic perspective towards life (Karabati et al., 2019). Previous studies in the field regarding the relationship between rumination and life satisfaction have also provided clear evidence that rumination is a risk factor for low life satisfaction (Zhang et al., 2021; Zheng et al., 2019). Drawing on these studies we predict that the more individuals ruminate due to the outbreak, the lower their life satisfaction levels will be.

## THE EFFECT OF FEAR OF COVID-19 ON LIFE SATISFACTION

COVID-19 is a respiratory disease that spreads rapidly with a high risk of infection and of fatality. High levels of morbidity and mortality regarding an outbreak and disease impact levels of fear (Ahorsu et al., 2020). Thus, the outbreak may trigger fear on an individual level. Fear is a primal emotion and surfaces in the face of a perceived threat (Bakioğlu et al., 2021). In other words, fear prepares the individual to react to any potential physical or mental dangers (Pappas et al., 2009). However, individuals' mental health and life satisfaction levels can be impacted negatively when fear reaches uncontrollable levels (Kondratowicz et al., 2022). Duong (2021) also conducted a similar study with Vietnamese university students, where they found that anxiety towards and fear of COVID-19 are strongly linked with psychological troubles, sleep disorders and life satisfaction. Dymecka et al. (2021a) found in a study they conducted in Poland that fear of COVID-19 is negatively linked with life satisfaction. Research results show that growing concern and stress in individuals with high levels of fear of COVID-19 cause changes in lifestyle, leading to a negative impact on life satisfaction (Duong, 2021; Dymecka et al., 2021b; Gawrych et al., 2021).

## THE MEDIATING ROLE OF FEAR OF COVID-19

Ruminating leads to depressive thoughts, causes negative thinking and hinders problem-solving skills (Nolen-Hoeksema et al., 2008). Thus, individuals with a higher tendency to ruminate are far more likely to lose themselves in negative feelings such as fear and anxiety in the face of challenging events such as an outbreak. Zwolinski (2012) posited that individuals with predominantly ruminating thoughts tend to experience sadness, worry and anger. Moberly and Watkins (2008), on the other hand, revealed a reciprocal relationship between negative moods and rumination. Ciesla and Roberts (2007) identified a strong link between rumination and dysphoria in individuals who reported high levels of negative cognition. A clear characteristic of rumination is its focus on negative thoughts and feelings, which is why this study predicts that ruminating may negatively affect life satisfaction through fear of COVID-19.

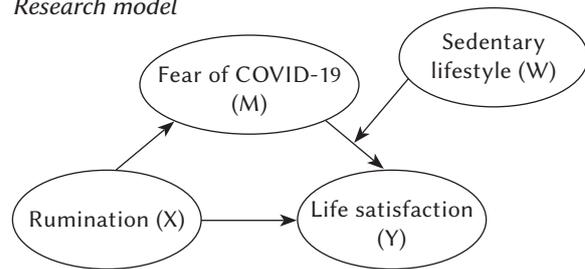
## THE MODERATING EFFECT OF SEDENTARY LIFESTYLE

The COVID-19 outbreak and the following isolation and quarantine periods increased the fear of infection and created an environment of very little physical activity (Pinto et al., 2020). This led to a restriction in physical contact and movement for individuals, increasing physical inactivity (Chen et al., 2020). Physical inactivity refers to activities which have no effect on the individual's spending of energy (lying down, sitting, watching television, using a computer, etc.) (Pate et al., 2008). Such activities represent a sedentary lifestyle when they exceed an individual's required level of resting (Hall et al., 2021).

The World Health Organization (WHO) recommended engaging in physical activities at home during the outbreak for people to improve their immune systems, as well as their psychological resilience, without any special equipment necessary, with a campaign called "Be active during COVID-19" (WHO, 2020a). Zhang et al. (2020) conducted a study to determine the negative effects of COVID-19 outbreak on Chinese university students' moods and concluded that physical activities alleviate negative feelings. Qin et al. (2020) investigated the effects of the quarantine in China on lifestyles and found that individuals with intense physical activities have a better mood than those with lighter physical activities. Brailovskaia et al. (2021) conducted a study with respondents from different countries (Germany, Italy, Russia and Spain) and found that the burden of COVID-19 is positively linked with symptoms of depression and negatively linked with physical activity. Thus, identifying the variables that mediate the negative effects of fear of COVID-19 on life satisfaction

Figure 1

## Research model



is critically important for both individual and public health. Developing strategies that aim to decrease individuals' negative feelings and pessimistic thoughts during the pandemic is important for individual and public health (Rogowska et al., 2021). In this context, findings of the aforementioned study reveal that an active lifestyle is a significant way to protect one's physical and mental health, as well as one's immune system, and an effective variable in reducing the effect of fear of COVID-19 on life satisfaction.

## PROPOSED CONCEPTUAL MODEL AND HYPOTHESES

The aim of this study is to investigate the moderating role of sedentary lifestyle and mediating role of fear of COVID-19 on the relationship between ruminations and life satisfaction. As can be viewed in Figure 1, the moderated mediation research model is tested herein. In this context, the following hypotheses were proposed, based on the aforementioned literature review.

H1: Rumination negatively affects life satisfaction.

H2: Fear of COVID-19 negatively affects life satisfaction.

H3: Rumination positively affects fear of COVID-19.

H4: Fear of COVID-19 plays a mediating role in the relationship between rumination and life satisfaction.

H5: A sedentary lifestyle plays a moderating role in the relationship between COVID-19 fear and life satisfaction.

H6: A sedentary lifestyle plays a moderating role in the indirect effect of rumination on life satisfaction through fear of COVID-19.

## PARTICIPANTS AND PROCEDURE

## PARTICIPANTS

Data from 386 respondents were collected; 68% of respondents were male and 32% were female. A total of 70% of respondents are in the age group 18-37, 57% are married, 52% are high school graduates and

35% have undergraduate degrees. Departments of food and beverages (33%), housekeeping (21%), front office (15%), accounting, human resources, purchasing (14%), as well as kitchen staff (11%) participated in the study.

## PROCEDURE

Data were collected via questionnaires within the scope of this study that employed a quantitative research method. Since the COVID-19 outbreak prevailed during the study, social isolation and social distancing rules were followed strictly. Therefore, convenience sampling was used in the research. The survey was conducted between June and August of 2021 with hotel staff of eight five-star hotels in Antalya's Lara-Kundu and Manavgat regions. Respondents were guaranteed confidentiality regarding the information they provided within the scope of the study, informed generally about the study before any applications, the voluntary nature of the study, as well as the possibility of withdrawal at any time they wished. A total of 500 questionnaires were distributed, and at the end, 432 were collected. From amongst all of these questionnaires, 28 had missing answers and 18 had extreme values. The conceptual model of this study, where the moderated mediation model was tested, is presented in Figure 1. This model posits that sedentary lifestyle moderates the indirect effect of rumination (X) on life satisfaction (Y) through fear of COVID-19 (M). The model predicts that rumination will increase fear of COVID-19 ( $X \rightarrow M$ ), while fear of COVID-19 will decrease life satisfaction ( $X \rightarrow M \rightarrow Y$ ). Moreover, it suggests that the impact of rumination (X) on life satisfaction (Y) as mediated by fear of COVID-19 (M) in individuals with sedentary lifestyles will be stronger than in those with active lifestyles.

## MEASURES

*The Fear of COVID-19 Scale.* Fear of COVID-19 was measured with the scale developed by Ahorsu et al. (2020) and consisting of seven propositions. Cronbach's  $\alpha$  for the original scale was .82. The determination of the Turkish validity and reliability of the scale was conducted by Satici et al. (2021) and Cronbach's  $\alpha$  was found to be .84. The scale is intended to measure the fear that arises in individuals due to COVID-19. Higher scores indicate higher levels of COVID-19 fear. There is no reverse scored item in the scale. The scale has a single factor design with questions to be answered with a 5-point Likert scale from 1 (*I strongly disagree*) to 5 (*I strongly agree*).

*Self-Critical Rumination Scale.* Rumination was measured with the Self-Critical Rumination Scale

developed by Smart et al. (2016). The scale was developed to evaluate ruminative processes associated with self-critical thoughts. Questions in this scale aim to measure how the person perceives themselves. The original study revealed that the scale has a single factor structure and Cronbach's  $\alpha$  was found to be .92. The Turkish adaptation and determination of the Turkish validity and reliability of the scale were conducted by İnceç et al. (2021). The scale comprises 10 items. Items are rated on a 5-point Likert scale from 1 (*does not describe me at all*) to 5 (*describes me completely*).

*Health Promoting Lifestyle Profile (HPLP).* Sedentary lifestyle was measured with the 8 questions from the Physical Activity of Health Promoting Lifestyle Profile (HPLP), which was developed by Walker et al. (1987) and finalized by Walker and Hill-Polecky (1996). Cronbach's  $\alpha$  for the original scale was .92. The questions of physical activity reveal the extent to which light, medium, and heavy exercises are performed as part of everyday life. A low score obtained from the scale indicates a sedentary lifestyle. Bahar et al. (2008) conducted the Turkish validity and reliability of the scale and the internal consistency coefficient was found to be .79. The items were rated on a 4-point Likert-type scale from 1 (*never*) to 4 (*regularly*).

*The Satisfaction with Life Scale (SWLS).* The scale was developed by Diener et al. (1985). With a single factor structure, the scale consists of five propositions. The SWLS is one of the most common scales used to measure subjective well-being and is intended to assess an individual's judgment of her or his life satisfaction. A high score obtained from the scale indicates high life satisfaction. The validity and reliability studies of the scale have been carried out by many authors in Turkey. The studies conducted in Turkey revealed that the scale has a high internal consistency coefficient (Bekmezci & Mert, 2018; Yetim, 1993). A 5-point Likert scale was used to score the statements in the scales (1 – *I strongly disagree*; 5 – *I strongly agree*).

*Personal information form.* Demographics of respondents and information on age, marital status, educational status and department of employment were acquired with a personal information form.

## RESULTS

### MEASUREMENT MODEL

Data were analyzed with IBM AMOS V24. Construct validity of the scales was tested with CFA by using the maximum likelihood calculation method. In order for the scale model to be compliant with the suggested research model, there must be fit values for the scale, significant *t*-values, and standard-

ized factor loads above .50. At the same time, convergent and divergent validity must be presented in the findings to ensure construct validity. Table 1 reveals that standardized factor loads of scale items are between .782 and .940, while the factor loads of all items are over .50 and all factor loads are statistically significant ( $p < .001$ ). Skewness and kurtosis

values of the scale items in the research model were detected to be between  $-1.5$  and  $+1.5$ . Since skewness and kurtosis values are within the interval designated in the literature, the data do show normal distribution (Kline, 2016). Goodness of fit values of the scale model are also observed to be within good fit values ( $\chi^2 = 597.71$ ,  $df = 399$ ,  $\chi^2/df = 1.50$ ,  $p < .001$ ,

**Table 1***Results of measurement model*

Items	<i>M</i>	<i>SD</i>	SFL	<i>t</i>	<i>p</i>	Skewness	Kurtosis
Rumination 1	2.93	1.29	.895	fixed		0.01	-1.00
Rumination 2	3.06	1.22	.819	19.17	< .001	-0.16	-0.93
Rumination 3	3.01	1.20	.854	21.16	< .001	-0.11	-0.80
Rumination 4	3.05	1.15	.823	19.44	< .001	-0.07	-0.67
Rumination 5	2.98	1.12	.851	20.92	< .001	0.09	-0.66
Rumination 6	2.87	1.16	.826	19.61	< .001	-0.04	-0.83
Rumination 7	3.00	1.18	.874	22.19	< .001	-0.01	-0.86
Rumination 8	2.97	1.11	.870	21.93	< .001	0.10	-0.68
Rumination 9	2.96	1.01	.898	23.54	< .001	0.15	-0.62
Rumination 10	2.99	1.03	.937	26.43	< .001	0.30	-0.63
COVID-19 fear 1	3.20	1.23	.891	fixed		-0.10	-0.85
COVID-19 fear 2	3.23	1.03	.784	17.37	< .001	-0.48	-0.33
COVID-19 fear 3	3.30	1.13	.804	18.29	< .001	-0.31	-0.47
COVID-19 fear 4	3.20	1.02	.811	18.58	< .001	-0.02	-0.49
COVID-19 fear 5	3.14	1.05	.870	21.54	< .001	-0.15	-0.58
COVID-19 fear 6	3.16	0.95	.903	23.42	< .001	0.12	-0.65
COVID-19 fear 7	3.12	0.94	.909	23.73	< .001	0.26	-0.69
Sedentary lifestyle 1	2.58	1.46	.907	fixed		0.45	-1.16
Sedentary lifestyle 2	2.69	1.26	.881	23.27	< .001	0.30	-1.10
Sedentary lifestyle 3	2.83	1.29	.850	21.45	< .001	0.27	-0.95
Sedentary lifestyle 4	2.66	1.23	.863	22.26	< .001	0.41	-0.86
Sedentary lifestyle 5	2.58	1.32	.912	25.82	< .001	0.43	-1.05
Sedentary lifestyle 6	2.66	1.19	.893	24.27	< .001	0.47	-0.81
Sedentary lifestyle 7	2.70	1.18	.937	27.85	< .001	0.51	-0.82
Sedentary lifestyle 8	2.74	1.13	.940	28.16	< .001	0.64	-0.67
Life satisfaction 1	3.03	1.10	.867	fixed		-0.21	-0.32
Life satisfaction 2	3.20	1.10	.782	16.50	< .001	-0.34	-0.57
Life satisfaction 3	3.20	1.05	.809	17.61	< .001	-0.13	-0.19
Life satisfaction 4	3.10	0.91	.838	18.76	< .001	-0.10	0.06
Life satisfaction 5	3.06	1.01	.929	22.87	< .001	-0.15	-0.22

Note. SFL – standardized factor loads.

RMSEA = .042, NFI = .939, RFI = .933, IFI = .979, TLI = .977, CFI = .979, RMR = .029). According to these numbers, the research model and data agree with each other. Additionally, the recommendations of Podsakoff et al. (2003) were followed to eliminate common method bias that may arise due to the fact that the data were collected from one source. We used Harman’s single-factor test to determine the presence of common method bias. In the event that there is, in fact, common method bias, Harman’s single-factor analysis will reveal one dominant factor. All propositions were subjected to principal component factor analysis without rotating and the analysis found 3 with eigenvalues over 1, comprising 75% of total variance. The first factor accounts for 33.02% of total variance, while this value does not correspond with the majority of total variance. Accordingly, the study does not have common method variance issue. Data concerning convergent and discriminant validity of the measurement model are provided in Table 2. Composite reliability (CR) values of all scales in the measurement model are between .92 and .97, above the threshold limit of .70. At the same time, average variance extracted (AVE) values of scales are higher than the .50 threshold, between .72 and .81. Since all scales displayed CR > AVE, the measurement model does have convergent validity. AVE values of the scales in Table 2 are greater than maximum shared variance (MSV) and average shared variance (ASV), and AVE square root ( $\sqrt{AVE}$ ) for each variable is greater than the correlation coefficients between all variables which present discriminant validity for scales. The internal validity for scales was evaluated with Cronbach’s  $\alpha$ . Internal validity was detected, since all scales showed  $\alpha > .70$ . Accordingly, the research model displays convergent and discriminant validity, besides high internal validity. According to the correlation coefficients in Table 2, rumination correlated positively with fear of COVID-19 ( $r = .53, p < .001$ ). On the other hand, rumination has a negative and strong relationship with life satisfaction ( $r = -.65, p < .001$ ), and a slightly negative relationship with sedentary lifestyle ( $r = -.14, p < .001$ ). Sed-

entary lifestyle had a positive relationship with life satisfaction ( $r = .53, p < .001$ ), while there was no significant relationship with fear of COVID-19 ( $r = .03, p > .05$ ). Fear of COVID-19 had a negative relationship with life satisfaction ( $r = -.51, p < .001$ ).

RESULTS OF MODERATED MEDIATION MODEL

First of all, the mediating effect of fear of COVID-19 on the relationship between rumination and life satisfaction was tested (RUMNTN → COVFEAR → LIFSAT). Based on the bootstrap method, regression analysis showed that the indirect impact of rumination on life satisfaction as mediated by fear of COVID-19 is significant ( $\beta = .11, 95\% \text{ CI } [-.39; -.53]$ ). Accordingly, fear of COVID-19 mediates the relationship between rumination and life satisfaction. Table 3 Model 1 illustrates that all variables included in the regression analysis account for approximately 46% of the change in life satisfaction ( $R^2 = .46, F(2, 383) = 121.28, p < .001$ ). In accordance with these results, hypotheses H1, H2, H3 and H4 were supported.

Results of the regression analysis, displaying the moderator effect, are shown in Table 3 Model 2. According to the results in Model 2, the effects of fear of COVID-19, sedentary lifestyle and the interaction term on life satisfaction, which is the dependent variable, are statistically significant. All variables in Model 2 account for 57% of the changes in life satisfaction ( $R^2 = .57, F(3, 382) = 126.42, p < .001$ ). Fear of COVID-19 negatively impacts life satisfaction ( $\beta = -.52, 95\% \text{ CI } [-.60; -.44]$ ), while sedentary lifestyle positively impacts it ( $\beta = .74, 95\% \text{ CI } [.80; .08]$ ). The interaction of fear of COVID-19 and sedentary lifestyle had a significant effect on life satisfaction ( $\beta = .45, 95\% \text{ CI } [.29; .60]$ ), and these results indicate that the relationship between fear of COVID-19 and life satisfaction was moderated by sedentary lifestyle. A simple slope test showed that (Figure 2) the impact of fear of COVID-19 on life satisfaction in respondents with highly sedentary lifestyles ( $\beta = -.70, 95\% \text{ CI } [-.80; -.60]$ ) is stronger than in those with less

Table 2

Correlations, convergent and discriminant validity of observed variables

	(1)	(2)	(3)	(4)	$\alpha$	AVE	CR	MSV	ASV
(1) Rumination	(.87) <sup>a</sup>				.96	.75	.96	.42	.24
(2) COVID-19 fear	.53 <sup>**</sup>	(.85) <sup>a</sup>			.94	.73	.95	.28	.18
(3) Sedentary lifestyle	-.14 <sup>*</sup>	.03	(.85) <sup>a</sup>		.97	.81	.97	.27	.10
(4) Life satisfaction	-.65 <sup>**</sup>	-.51 <sup>**</sup>	.53 <sup>**</sup>	(.85) <sup>a</sup>	.92	.72	.92	.42	.32

Note. AVE – average variance extracted; CR – composite reliability; MSV – maximum shared variance; ASV – average shared variance; <sup>a</sup> square roots of AVE values; <sup>\*</sup>  $p < .05$ , <sup>\*\*</sup>  $p < .01$ .

**Table 3**

*Results of the mediating role of fear of COVID-19 and the moderating role of sedentary lifestyle on the relationship between ruminative thoughts and life satisfaction*

	$\beta$	SE	t	p	LLCI	ULCI	R <sup>2</sup>	F
Model 1: Mediation analysis								
Outcome variable: COVID-19 fear (M)								
Constant	1.75	.14	12.17	< .001	1.47	2.04	.25	111.59***
Rumination (X)	.48	.05	10.56	< .001	.39	.57		
Outcome variable: Life satisfaction (Y)								
Constant	5.26	.15	34.57	< .001	4.96	5.55	.46	126.42***
Rumination (X)	-.48	.05	-10.33	< .001	-.57	-.39		
COVID-19 fear (M)	-.22	.05	-4.39	< .001	-.32	-.12		
Bootstrap indirect effects	.11		-10.33		-.39	-.53		
Model 2: Moderation analysis								
Outcome variable: Life satisfaction (Y)								
Constant	3.10	.03	88.10	< .001	3.04	3.18	.57	126.42***
COVID-19 fear (X)	-.52	.03	-13.56	< .001	-.60	-.44		
Sedentary lifestyle (W)	.74	.07	12.10	< .001	.80	1.08		
X × M	.45	.08	5.61	< .001	.29	.60		
Model 3: Moderated mediation analysis								
Outcome variable: Life satisfaction (Y)								
Constant	4.01	.11	35.54	< .001	3.93	4.39	.67	144.58***
Rumination (X)	-.35	.03	-9.33	< .001	-.42	-.27		
COVID-19 fear (M)	-.32	.04	-7.38	< .001	-.39	-.23		
Sedentary lifestyle (W)	.62	.06	12.94	< .001	.70	.95		
M × W	.28	.07	4.17	< .001	.14	.43		
Conditional indirect effects of X on Y	$\beta$	SE	LLCI	ULCI				
Low sedentary lifestyle	-.06	.03	-.12	-.01				
High sedentary lifestyle	-.21	.03	-.25	-.15				
Index of moderated mediation	.14	.03	.07	.21				

Note. LLCI – lower limit confidence interval; ULCI – upper limit confidence interval; bootstrap sample size = 50,000; \*\*\*p < .001.

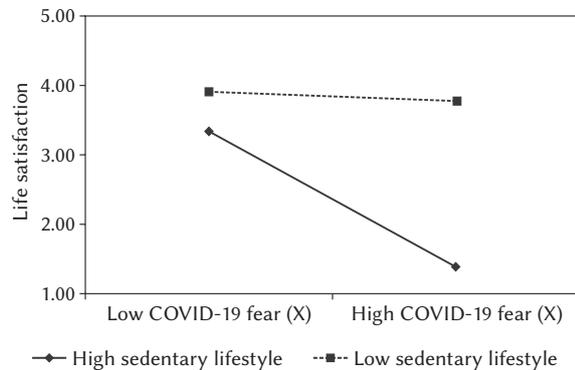
sedentary lifestyles ( $\beta = -.26$ , 95% CI [-.38; -.13]). In other words, the negative impact of fear of COVID-19 on life satisfaction substantially increases in individuals with inactive lifestyles. These findings supported hypothesis H5.

The study set up a moderated mediation regression model to test the moderating effect of sedentary lifestyle on the indirect impact of rumination on life satisfaction mediated by fear of COVID-19. Results of the regression analysis to determine whether or not the indirect impact of rumination (X) on life satisfaction (Y) as mediated by fear of COVID-19 (M)

differs according to sedentary lifestyle (W) are provided in Table 3 Model 3. The results show that the interaction term ( $\beta = .28$ , 95% CI [.14; .43]) and index of moderated mediation ( $\beta = .14$ , 95% CI [.07; .21]) are statistically significant. Consequently, sedentary lifestyle has a moderating effect on the indirect impact of rumination on life satisfaction, mediated by fear of COVID-19. Confidence interval values, acquired via bootstrap technique and shown in Table 3 Model 3, show that the indirect impact of rumination on life satisfaction mediated by fear of COVID-19 ( $\beta = -.21$ , 95% CI [-.25; -.15]) is significant when sedentary

**Figure 2**

*Sedentary lifestyle as a moderator in the relationship between fear of COVID-19 and life satisfaction*



lifestyle is higher. For individuals with non-sedentary lifestyles, on the other hand, the indirect impact of rumination on life satisfaction mediated by fear of COVID-19 ( $\beta = -.06$ , 95% CI  $[-.12; -.01]$ ) is significant at the cut-off value. To be specific, the indirect impact of rumination on life satisfaction mediated by fear of COVID-19 is higher in individuals with sedentary lifestyles and very weak in individuals with active lifestyles. These results supported hypothesis H6.

## DISCUSSION

Individuals who fail to manage the negative feelings and thoughts caused by the outbreak suffer from various problems such as stress, anxiety, depression, and sleep disturbance (Duong, 2021; Gao et al., 2020). Thus, studies that focus on understanding the psychological effects of the outbreak and its negative impacts on individuals are needed (Satici et al., 2021). However, the pandemic did not generate the same effect on everyone, as such research studies revealed (Tušl et al., 2021). The ways in which individuals perceive the state of COVID-19 depend on the individuals' traits. Differing by personality traits, ways of perception severely affect individuals' satisfaction regarding health and life. Some perceive the COVID-19 pandemic as a heavy burden to be shouldered, experiencing stress, disappointment, anger and hopelessness. Some, on the other hand, may perceive it less heavily, seeking practical coping strategies and keeping up with their daily routines as much as they can (Brailovskaia et al., 2021). Empirical studies that focus on the ways in which life satisfaction, a key indicator of health, is impacted in times of crises and can be preserved, are important to reduce the negative outcomes of the pandemic. In this context, the model tested herein suggests that the indirect impact of rumination on life satisfaction, mediated by fear of COVID-19, depends on sedentary lifestyles. The study was conducted

with a sample consisting of five-star hotel employees. Consequently, the indirect impact of rumination on life satisfaction, mediated by fear of COVID-19, was found to be significant. In other words, rumination increases fear of COVID-19, while fear of COVID-19 decreases life satisfaction. This finding indicates that increasing rumination in an individual results in a decrease of the individual's life satisfaction, which occurs via fear of COVID-19. Previous studies on rumination also revealed that they cause stress in individuals and decrease life satisfaction (Kumar et al., 2021; Moulds et al., 2020; Ysseldyk et al., 2007; Zheng et al., 2019). Moreover, fear of COVID-19 increases anxiety and depression (Hyland et al., 2020; Shevlin et al., 2020). In a study conducted with university students in Vietnam, Duong (2021) found that COVID-19 fear and concern reduce life satisfaction and increase sleep disorders through psychological distress. This negative impact of rumination on life satisfaction as mediated by fear of COVID-19 contributes to the Response Styles Theory.

Individuals who are more prone to ruminate are quickly affected by stress factors, evaluating events in a more negative light. The COVID-19 pandemic involved a largely ambiguous setting, which was a significant stress factor itself, it spread rapidly, the number of people infected increased every day and the recovery changed from person to person – all of these have the potential to negatively impact the lives of individuals who are prone to rumination. Studies in this regard reveal that rumination reduces life satisfaction (Zheng et al., 2019; Ysseldyk et al., 2007). It is important to identify how life satisfaction is affected according to personality traits in times of crisis, such as a pandemic, and to empirically identify the variables that cause such an impact to differ, because both endeavors help to reduce the negative outcomes of the pandemic. Within this framework, the second finding of the study is helpful. Another finding of this study shows that sedentary lifestyles significantly decrease the negative impact of ruminating on quality of life via COVID-19 fear. The negative impact of ruminative thoughts on life satisfaction, mediated by fear of COVID-19, is lower in employees with active lifestyles than those with sedentary lifestyles. This finding indicates that the negative impact of ruminating on life satisfaction, mediated by fear of COVID-19, decreases as the active lifestyle level of employees increases. In other words, an active lifestyle is found to play a preventative role against the negative effects of rumination.

Individuals who are prone to ruminate obsessively repeat negative events in their minds. Regular physical activities help individuals to put their minds at ease, away from such obsessive thoughts. Physical activities can also improve a sense of agency and levels of self-sufficiency, self-respect and positive mental health (Brailovskaia et al., 2021). Previous studies

also confirm that the increasingly active lifestyle of individuals protects both physical and mental health and positively influences life satisfaction (Brown et al., 2003; Moral-García et al., 2018; Vuillemin et al., 2005; Zurita-Ortega et al., 2018). A study on young adults conducted in Germany found that those who maintained or improved their physical activity levels under quarantine circumstances have more positive qualities of life than those with reduced level of physical activity (Niermann et al., 2022). Zach et al. (2021) found in a study they conducted in Israel that individuals who were physically active during quarantine reported positive emotions and lower levels of depressive states than those who are not physically active. In another study, conducted with respondents in different countries, it was concluded that physical activity buffered the association between depression symptoms and burden (Brailovskaia et al., 2021). Additionally, we found in this study that rumination and the fear of being infected have a negative impact on life satisfaction, against which sedentary lifestyle plays a preventative role. These conclusions show that physical activity can distance individuals from rumination and help them lead a positive life by contributing to the emergence of intensely positive thoughts.

On the other hand, measures such as social isolation and social distance, employed during COVID-19 times, play important roles in individuals' adoption of less active lifestyles. The United Nations (UN, 2020), in the health report it published, noted that many individuals are not able to participate in physical activities, conducted individually or in group formats, since the majority of suitable areas for physical activities are restricted, and as such, pandemic circumstances led individuals towards a more sedentary lifestyle. This may cause individuals to face various issues such as coronary diseases, hypertension, shortness of breath, neuroses, disappointment and, eventually, isolation from the outside world (Hull et al., 2020). Turgut et al. (2020) stated that the COVID-19 pandemic reduces the level of physical activity, enhancing negative moods and eating disorders. The study concluded that individuals who adopt sedentary lifestyles experience pandemic conditions in a more severe way. At least 150 minutes of medium intensity physical activity per week, as recommended by the World Health Organization (WHO, 2020b), can significantly contribute to one's mental and physical health, improving life satisfaction. Furthermore, studies have shown that those with low life satisfaction also display low performance in their jobs (Kim et al., 2021; Kumar et al., 2021). From this perspective, organizations' adoption of corporate policies to encourage active lifestyles would naturally decrease negative impacts of ruminative thoughts in times of COVID-19, which would, in turn, reflect positively on organizational performance.

## CONCLUSIONS

This study tested the moderated mediation model to further investigate the relationship between rumination and life satisfaction. From this perspective, the study analyzed the mediating role of fear of COVID-19 and moderating role of sedentary lifestyle on the relationship between rumination and life satisfaction. The study was conducted with hotel employees, who are at high risk of being infected due to working in close physical contact with customers. The study concluded that the negative impact of rumination on life satisfaction occurs via fear of COVID-19. This finding indicates that individuals' negative thoughts due to the outbreak lead to fear of COVID-19, which leads to lower levels of life satisfaction. Another finding of the study was that sedentary lifestyle moderated the indirect effect of ruminative thoughts on life satisfaction through fear of COVID-19. In short, the study found that fear of COVID-19 mediates the relationship between rumination and life satisfaction and this mediation becomes stronger as the level of sedentary lifestyle increases. The findings of this study provide valuable information, which may help understand the detailed impact of rumination on life satisfaction. Furthermore, it reveals how individual lifestyles differ in the face of psychological health and life satisfaction during times of crisis such as an outbreak. The study concluded that the negative impact of rumination on life satisfaction via the fear of being infected can be reduced with physical activities. Thus, the findings of this study provide substantial contributions with respect to how outbreak-caused negative reactions occur and differ.

## DISCLOSURE

The authors declare no conflict of interest.

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