Having a Leisure Companion Matters for Psychological Well-being Even When Aloneness Was Encouraged: A Panel Analysis of Korean Women

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Engaging in leisure activities with a companion plays an important role in individuals' psychological well-being. This study examines whether, and in what ways, the importance of leisure with a companion (i.e., social leisure) for psychological well-being extends to contexts in which aloneness is socially encouraged. Using a national sample of Korean women from the Korean Longitudinal Survey of Women and Families, we investigated the relationships between social leisure and psychological well-being—specifically levels of depression and happiness—before and during the COVID-19 pandemic. Our results showed that social leisure predicted decreased depression and increased happiness across time (before and during the pandemic), even after controlling for time spent on leisure and leisure satisfaction. Notably, during the pandemic, compared to the pre-pandemic period, the association between social leisure and reduced depression weakened, whereas its association with increased happiness strengthened. Social leisure before the pandemic predicted lower levels of depression during the pandemic. These results underscore the importance of having a companion(s) in non-work-related free-time activities, even when solitary pursuits were socially reinforced and normalized.

Keywords: social leisure, social restriction, depression, happiness

In recent years, many people all over the world have experienced an unprecedented and forced "alone" period due to the coronavirus disease 2019 (COVID-19). Physical health became the social priority during the pandemic, and social and physical distancing measures were placed in many countries, including South Korea, resulting in significant periods of social restriction. Although social/physical distancing was found to be effective in slowing down the virus transmission (Chu et al., 2020; Newbold et al., 2020),

overall happiness decreased (e.g., Kok et al., 2022) and psychological problems, such as depression, increased during this challenging period (e.g., Knox et al., 2022; Robinson et al., 2022; Wu et al., 2021). However, a meta-analysis also showed significant individual differences in how the pandemic influenced psychological well-being, with many individuals showing resilience during the unprecedented social restrictions (Robinson et al., 2022). This motivated us to investigate protective factors for individuals' well-being during these difficult times. The current study examined the role of social leisure on psychological well-being (i.e., depression and happiness) during socially restricted times.

Leisure is a complex construct that refers to activities in which people engage in during their spare time without obligation (e.g., Iso-Ahola & Baumeister, 2023; Parr & Lashua, 2004). Numerous studies supported the well-known notion that leisure is beneficial for psychological well-being, including depression (e.g., Lackey et

al., 2021) and happiness/positive emotions (e.g., Kono et al., 2022; Kuykendall et al., 2015). Newman et al. (2014) identified five psychological mechanisms of how leisure can improve psychological health, and among them, "affiliation" had the most theoretical support. Engaging in leisure activities with a companion (henceforth, social leisure) was found to promote a sense of social connectedness, and in turn reduces negative affect and enhances happiness (Newman et al., 2014 for review).

Did social leisure still play a crucial role even during the pandemic when aloneness was socially encouraged? The pandemic changed the structure and experiences of individuals' leisure activities (e.g., Bae & Chang, 2023; Meira et al., 2020). The importance of social leisure may be reduced during the COVID-19 due to the change in social norms that promote alone time. It is equally plausible, however, that social leisure remains significant or becomes even more important for psychological well-being during these times of social isolation. Spending time with a companion(s) during leisure activities may offset the impact of increasing loneliness caused by the pandemic. Results from previous studies on social leisure and overall social interactions on psychological well-being during the pandemic are inconsistent. Some studies showed that greater social leisure was associated with higher perceived pandemic-related growth (e.g., Liu et al., 2024), and greater social interactions with close people were related to reduced loneliness (e.g., Ji et al., 2022). In contrast, other studies demonstrated the opposite pattern: greater social interactions were associated with declined psychological well-being during the pandemic (e.g., Kim & Florack, 2021). To the best of our knowledge, no longitudinal study has examined the relationships between social leisure and psychological well-being, and compared the relationships between before and during the pandemic.

Using panel data from the Korean Longitudinal Survey of Women and Families (KLoWF), this study aimed to examine the relationship of social leisure with depression and happiness before and during the pandemic. Specifically, we used the wave 7 data collected before the pandemic outbreak (between 2018 August and 2019 April) and the wave 8 data collected after the outbreak (between 2020 September and 2021 May). During the wave 8, strict social restrictions (e.g., social/physical distancing, isolation in households) were in place throughout South Korea.

This study had two specific aims. Our first aim was to investigate the relationships between social leisure and psychological well-being, and explore whether the relationships would be moderated by the pandemic. That is, we intended to explore whether social leisure would be more or less important (or non-significant difference) for happiness and depression amid the pandemic (at wave 8), compared to the pre-pandemic times (at wave 7). In addition, a previous study showed that greater social interactions predicted future well-being: individuals with depression who reported spending more time with people at baseline showed higher well-being at the 10-year follow-up (Panaite et al., 2021). It is possible that social leisure before the pandemic would buffer the potential negative impact of the pandemic on psychological well-being. Thus, our second aim was to examine whether social leisure before the pandemic (at wave 7) would predict psychological well-being during the pandemic (at wave 8), even after controlling for social leisure at wave 8.

Despite the current research focusing on the pandemic, we believe that it can extend to post-pandemic contexts. Although social activities were unprecedentedly restricted on a large scale during the pandemic, there are various situations where aloneness is expected or even promoted, and social interactions may be limited on a smaller or more personal scale, making this study highly relevant. For example, students preparing for college entrance exams or studying for professional certifications are typically expected to spend a significant amount of time alone, which may make it challenging for them to engage in social interactions due to the large portion of their time devoted to studying. Similarly, workers may face long working hours, including overtime and late-night shifts, leaving little time for meaningful social activities outside of work. Furthermore, beyond COVID-19, there have been several instances of encouraged social restrictions due to potential health crises, such as the Middle East Respiratory Syndrome coronavirus (MERS-CoV), and similar challenges may arise in the future.

If our results reveal that social leisure remains significant during the pandemic, this could indicate that having a companion during spare, work-free time is still important, even when social interactions are discouraged and/or restricted. In addition, if engaging in social leisure before anticipated periods of aloneness predicts better well-being during those times, it could suggest that

social leisure can serve as a protective measure for maintaining future psychological well-being, buffering the negative effects of loneliness and helping individuals adapt more effectively to socially restrictive circumstances. Hence, our study sought to investigate the potential importance of social leisure during socially restricted times using data collected before and during the COVID-19 pandemic as an example of such periods.

Methods

Study Sample

We used data from the KLoWF collected at waves 7 and 8. The KLoWF, conducted by the Korean Women's Development Institute in South Korea, employed a stratified multistage sampling design based on the Korean Population and Housing Census, ensuring the representativeness of the national sample of Korean women. Respondents were women aged above 19 and were interviewed every two years. Data at wave 7 was collected via computer-assisted personal interviewing (CAPI) and table-assisted personal interview (TAPI), while data at wave 8 was collected using only TAPI during the pandemic. Informed consent was obtained from all respondents for data usage. The data that support the findings of this study are openly available in Korean Longitudinal Survey of Women and Families at https://gsis.kwdi.re.kr/klowf/portal/dataSet/rdssListPage.do?phDivCd=P.

Measures
Social Leisure

In this study, social leisure was defined as having a companion(s) for a participant's most frequently engaged leisure activities. A single-item question was used in the KLoWF to measure social leisure. Participants were asked to report a person that they were with during their most frequently engaged leisure activities in the past year with 13 response options, including "alone" as well as parents, friends, a romantic partner, children, and more. A binary social leisure variable was created: 0 when "alone" was endorsed and 1 when another response other than "alone" was endorsed.

Psychological Well-being

Depression was measured using the Korean translated Center of Epidemiological Studies-Depression Scale, 10-item (CES-D-10; Andresen et al., 1994). Participants were asked to rate how often they experienced depressive symptoms in the past week (e.g., I felt depressed) on a 4-point Likert scale (0 = rarely, 3 = all the time). A total score was used with greater scores indicating higher depressive symptoms (Cronbach's α = .88 in this sample). Happiness was assessed using a single-item question in which participants were asked to rate the extent to which they were currently feeling happy on a 10-point Likert scale (0 = extremely unhappy, 10 = extremely happy).

Other Variables

Demographic variables included age and levels of education (1 = uneducated, 2 = primary education, 3 = middle school, 4 = high school, 5 = associate degree, 6 = bachelor's degree, 7 = master's degree and above). To control for potential confounding variables, we considered the following leisure-related variables: participant's perceived leisure satisfaction (1 = extremely dissatisfied, 7 = extremely satisfied), the average amount of time spent on leisure during typical week (coding as hours per a week), levels of vigorous physical activities (days per a week; 1 = once a week, 7 = every day), and perceived physical health (1 = extremely bad, 5 = extremely good).

Statistical Analysis

To examine the relationships between social leisure and psychological well-being, and the moderation of the pandemic in the relationships, we used generalized estimating equations (GEE) (Zeger et al., 1988). GEE is an extension of the generalized linear model suited for correlated data and repeated measurement, which is appropriate for our data where participants have repeated measures at waves 7 and 8. Two GEE analyses were conducted with happiness and depression as an outcome, respectively. In each model, binary social leisure (0 = alone, 1 = with a companion[s]), time (7 = before the pandemic, 8 = during the pandemic), and the social leisure by time interaction were entered as main predictor with demographic variables (age, education) and leisure-related variables as covariates.[1]

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1) As standardized regression coefficients are not provided in GEE, we followed an approach used in prior research (e.g., Ditmars et al., 2022; Zerger et al., 1988) by transforming continous variables into z-scores, re-conducting the analyses using these transformed variables, and reporting the regression coefficients, along with those from the analysis using non-transformed variables, in Table 2.

In addition, to investigate whether social leisure before the pandemic predicts psychological well-being during the pandemic even after controlling for concurrent social leisure, we conducted two multiple linear regression analyses with depression and happiness as an outcome, respectively. In each model, psychological well-being at wave 8 was entered as an outcome with social leisure at wave 7 as a main predictor, and social leisure at wave 8 and psychological well-being at wave 7 as well as demographic variables at wave 8 and leisure-related variables at waves 7 and 8 as covariates.

Results from correlational analyses showed that demographic and leisure-related variables were significantly associated with our key variables (e.g., depression was positively correlated with age and negatively associated with education and perceived health; see Supplementary Table 1 in the Supplementary Materials A for details). Therefore, we included these variables as covariates in the models. Although education is an ordinal variable, we treated it as a continuous variable for analytical purposes, following prior research (e.g., Lee et al., 2021; Preece et al., 2022). Throughout the analyses, we used SPSS version 27 software (IBM Corp, 2020). Missing data was handled by multiple imputation (Sterne et al., 2009).

Results[2]

A total of 9,602 and 9,175 individuals participated in wave 7 (before the pandemic) and wave 8 (during the pandemic), respectively, with 8,569 individuals completing surveys at both waves. Detailed characteristics of samples were included in Table 1. Correlations among the variables are presented in Supplementary Table 1.

Does Social Leisure Predict Psychological Well−Being Before and During the Pandemic?

Social leisure significantly predicted psychological well-being across time (before and during the pandemic): having a leisure companion predicted decreased depression, $B = -.69$, $p < .001$, and increased happiness, $B = .11$, $p < .001$, compared to those who engaged in leisure activities alone. The social leisure by time interactions were significant for depression and happiness. The positive

Table 1. Participant Characteristics at Wave 7 and Wave 8

Participant Characteristics	Wave 7 $N = 9,602^{a}$ Mean (SD)	Wave 8 $N = 9,175^{b}$ Mean (SD)
Age	49.6 (14.5)	51.6 (14.5)
Education		
Uneducated	275 (2.9%)	263 (2.9%)
Primary school	1,296 (13.5%)	1,259 (13.7%)
Middle school	1,047 (10.9%)	1,006 (11.0%)
High school	3,758 (39.1%)	3,583 (39.1%)
Associate degree	1,162 (12.1%)	1,103 (12.0%)
Bachelor's degree	1,905 (19.8%)	1,813 (19.8%)
Over master's degree	157 (1.6%)	146 (1.6%)
Perceived health	3.5 (0.9)	3.4 (0.9)
Physical activity (days/wk)	1.0 (1.9)	0.9 (1.8)
Leisure time (hours/wk)	19.7 (10.6)	20.8 (11.3)
Leisure satisfaction	4.4 (1.2)	4.4 (1.0)
Leisure with a companion		
Alone	3,563 (37.1%)	4,554 (49.7%)
Together	6,034 (62.9%)	4,615 (50.3%)
Depression[c]	14.3 (4.9)	14.6 (5.0)
Happiness	6.4 (1.5)	6.5 (1.4)

Categorical variable given as frequency (%).
[a]N ranges from 9,597 to 9,602 due to missing data. [b]N ranges from 9,169 to 9,175 due to missing data. [c]Depression, measured as the sum score of the 10-item Korean version of the Center for Epidemiologic Studies Depression Scale.

relationship between social leisure and happiness was stronger during the pandemic, relative to before. In contrast, the relationship between social leisure and decreased depression was lessened during the pandemic, compared to the pre-pandemic period. Notably, time was not a significant predictor of both depression and happiness in this sample, indicating that participants' psychological well-being did not significantly deteriorate during the pandemic. Detailed results were presented in Table 2.

Does Social Leisure Before the Pandemic Predict Future Psychological Well−Being?

Results from regression analyses showed that having a leisure companion before the pandemic predicted lower levels of depression during the pandemic, $B = -.26$, $t(10,194) = -2.59$, $p = .01$, even after accounting for concurrent social leisure as well as other covariates. The predictors in the model explained 50% of the vari-

2) Results of additional analyses using data from individuals with heightened depression (participants with CES-D scores above 15 at wave 7) were presented in the Supplementary Materials B. The results of these analyses are largely consistent with our main findings based on the entire sample, with some differences noted in the Supplementary Materials B.

Table 2. Generalized Estimating Equation Model for Social Leisure and Psychological Well-being with Multiple Imputed Data

	B	95% CI		B*	p
		LL	UL		
Outcome: depression					
Social leisure	-.69	-.88	-.50	-.69	< .001
Time	.09	-.10	.28	.09	.372
Social leisure × Time	.34	.09	.59	.34	.008
Age	-.01	-.02	-.004	-.19	.003
Education	-.29	-.36	-.22	-.41	< .001
Perceived health	-1.97	-2.08	-1.86	-1.68	< .001
Physical activity	.21	.18	.25	.45	< .001
Leisure time	-.001	-.01	.01	-.01	.750
Leisure satisfaction	-.27	-.34	.20	-.30	< .001
Outcome: happiness					
Social leisure	.11	.05	.16	.11	< .001
Time	.02	-.04	.07	.02	.557
Social leisure × Time	.31	.23	.38	.31	< .001
Age	.003	.002	.005	.05	< .001
Education	.15	.13	.17	.20	< .001
Perceived health	.42	.39	.45	.36	< .001
Physical activity	.003	-.01	.01	.01	.545
Leisure time	.0002	-.002	.002	.002	.872
Leisure satisfaction	.39	.37	.41	.43	< .001

Social leisure (alone vs. having a companion[s]); Time (wave 7 vs. wave 8); B*, regression coefficients from the analyses using z-transformed continuous variables; Education was measured as an ordinal variable but treated as continuous for analytical purposes.

ance in depression, $R^2 = .50$ (mean R^2 across multiple imputations; van Ginkel, 2019), $ps < .001$, $f^2 = 1.00$, indicating a large effect based on Cohen (1992)'s guidelines. In contrast, social leisure before the pandemic did not predict happiness during the pandemic, $B = -.04$, $t(10,194) = -1.59$, $p = .114$, when accounting for concurrent social leisure (Table 3). The model accounted for 58% of the variance in happiness, $R^2 = .58$ (mean R^2 across multiple imputations), $ps < .001$, with f^2 of 1.38 (a large effect).

Discussion

Using national panel data from South Korea, this study investigated the role of having a leisure companion (social leisure) on psychological well-being before and during the pandemic, the unprecedented socially restricted period. Our main findings were as follows: 1) Social leisure predicted lower levels of depression and higher levels of happiness across time (both before and during the pandemic). 2) The relationship between social leisure and increased happiness was stronger, whereas the relationship between

social leisure and decreased depression was weakened during the pandemic, relative to the pre-pandemic period. 3) Social leisure prior to the pandemic predicted decreased depression during the pandemic, even after controlling for social leisure amid the pandemic.

The findings that social leisure predicted decreased depression and increased happiness across time highlight the importance of having a leisure companion(s) in psychological well-being even during the pandemic when solitary activities were highly normalized and encouraged. In addition, social leisure was more strongly associated with increased happiness during the pandemic, compared to before. Leisure activities can be particularly important during stressful events. Researchers argued that leisure can serve a function to help individuals detach and even recover from stress (e.g., Sonnentag, 2012; Sonnentag & Fritz, 2015; Taylor et al., 2020). Social leisure in particular provides benefits of increased sense of belonging (e.g., Newman et al., 2014) as well as decreased sadness and loneliness (e.g., Dahlberg et al., 2022). Indeed, previous studies suggested that social leisure, relative to alone activities, predicted

Table 3. Regression Model for Social Leisure and Psychological Well-being with Multiple Imputed Data

	B	95% CI		SE	β	p
		LL	UL			
Outcome: depression at wave 8						
Social leisure						
At wave 7	-.26	-.45	-.06	.01	-.05	.010
At wave 8	-.21	-.39	-.02	.01	-.04	.032
Depression at wave 7	.29	.27	.31	.01	.28	<.001
Age	-.004	-.01	.004	.004	-.01	.361
Education	-.08	-.16	-.003	.04	-.02	.043
Physical activity						
At wave 7	-.13	-.18	-.07	.03	-.05	<.001
At wave 8	.29	.22,	.36	.03	.12	<.001
Leisure satisfaction						
At wave 7	.09	-.003	.19	.05	.02	.058
At wave 8	-.31	-.41	-.21	.05	-.06	<.001
Perceived health						
At wave 7	-.07	-.20	.06	.07	-.01	.304
At wave 8	-1.88	-2.01	-1.75	.07	-.32	<.001
Leisure time						
At wave 7	-1.353	-1.94	-.76	.30	-.05	<.001
At wave 8	.86	.31	1.41	.28	.03	.002
Outcome: happiness at wave 8						
Social leisure						
At wave 7	-.04	-.09	.01	.03	-.03	.114
At wave 8	.36	.31	.41	.03	.27	<.001
Happiness at wave 7	.28	.26	.29	.01	.30	<.001
Age	.003	.0002	.01	.001	.03	.033
Education	.07	.04	.09	.01	.07	<.001
Physical activity						
At wave 7	.01	.001	.02	.01	.02	.032
At wave 8	.02	.002	.03	.01	.03	.026
Leisure satisfaction						
At wave 7	-.01	-.03	.01	.01	-.01	.259
At wave 8	.38	.35	.40	.01	.29	<.001
Perceived health						
At wave 7	.07	.03	.11	.02	.05	<.001
At wave 8	.34	.31	.37	.02	.22	<.001
Leisure time						
At wave 7	.003	-.15	.15	.08	.0003	.974
At wave 8	-.05	-.20	.09	.08	-.01	.480

Social leisure (alone vs. having a companion[s]); Education was measured as an ordinal variable but treated as continuous for analytical purposes.

higher levels of happiness (Adams et al., 2011; Morse et al., 2021). Our study findings indicate that social leisure may serve as a protective factor for happiness particularly during socially restricted periods, such as the pandemic. Caution is warranted as this study did not control individuals' overall levels of social interactions outside leisure activities, and thus cannot conclude that leisure is a

particular means associated with increased happiness during the pandemic. Future research is imperative to test whether social leisure predicts increased happiness during a stressful time, such as the pandemic, even after accounting for the impact of overall social interactions.

Notably, we found that the relationship between social leisure

and decreased depression was lessened during the pandemic, compared to the pre-pandemic period. One possible explanation is that the normalized aloneness during the pandemic may have paradoxically buffered the impact of solitary leisure on depression. According to the self-discrepancy theory (Higgins, 1989), depression is related to greater discrepancy between one's ideal self and their actual self. With physical distancing measures, the lower level of social interactions in general may have become a new social norm during the pandemic. Indeed, previous research showed that the perceived social connectedness among people decreased amid the pandemic, compared to before (e.g., Folk et al., 2020). It is possible that the impact of solitary leisure activities on depression may have decreased because a person's ideal status of social connection and their actual status (i.e., being alone during leisure time) has reduced during the pandemic, and accordingly they may have felt less depressed even when having no companions in leisure activities.

In addition, we found that having a leisure companion before the pandemic predicted lower levels of depression during the pandemic even after controlling for concurrent social leisure and other-relevant covariates. These findings are consistent with previous research that showed greater baseline social interactions predicting better future well-being (e.g., Fowler et al., 2013; Fritz et al., 2023; Panaite et al., 2021). The accumulation of social experiences and perceived social support in leisure activities could be the reason why social leisure predicted decreased future depression. Further, previous studies have suggested that individuals who perceive higher levels of social support through leisure activities have more resources to cope with stressors (e.g., Coleman & Iso-Ahola, 1993; Iso-Ahola & Park, 1996). Having engaged in leisure activities with a companion(s) before the pandemic may have helped individuals equipped with more resources for pandemic-related stress, leading to reduced depression. Results from this study highlight the importance of social leisure as a buffer for future pandemic stress, particularly its impact on depression.

The current study has several limitations. First, our sample consists of Korean women, which may limit the generalizability of the current results to broader populations. Second, the KLoWF survey included only one item regarding social leisure (whether a person had a companion or not during their leisure activities). Accord-

ingly, we could not examine other aspects of social leisure (e.g., frequency of social leisure, perceived social connectedness during leisure activities, and perceived closeness to a leisure companion). We suggest future research explore how various aspects of social leisure may interact with having a leisure companion(s) in their prediction of psychological well-being. Lastly, the current study only focused on two aspects of psychological well-being, depression and happiness. Although depression and happiness were both closely related to loneliness, which is the prominent affect increased by the pandemic (Okruszek et al., 2020), future research can test this topic using other domains of well-being, such as anxiety and life satisfaction.

Despite these limitations, our study was novel in testing both concurrent and prospective relationships between having a leisure companion(s) and psychological well-being, using a large representative sample of Korean women. We found that social leisure predicted both increased happiness and decreased depression during the pandemic, and pre-pandemic social leisure predicted decreased future depression, even after controlling for concurrent social leisure and other relevant variables. These results supported the importance of having a companion(s) in free-time activities even when social interactions were unprecedentedly discouraged and restricted, and highlight the potential protective benefit of social leisure for future well-being, particularly in reducing depression.

Author contributions statement

Kang, graduate student at Sungkyunkwan University, designed this study and led manuscript preparation. Jang, graduate student at Sungkyunkwan University, conducted a data analysis and led manuscript preparation. Yoon, assistant professor at Sungkyunkwan University, provided the feedback about the study design. All authors provided critical feedback, participated in revision of the manuscript, and approved the final submission.

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Supplementary Materials A

Supplementary Table 1. Correlations Among All Variables in the Model

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Wave 7																	
1. Age																	
2. Education	-.59***																
3. Perceived Heath	-.45***	.38***															
4. Physical activity	.04***	.04***	.04***														
5. Leisure time	.16***	-.15***	-.15***	-.01													
6. Leisure satisfaction	.11***	-.08***	.02*	.11***	.27***												
7. Social Leisure	-.11***	.09***	.12***	.19	-.05***	.07***											
8. Depression	.20***	-.19***	-.33***	-.03**	.03**	-.07***	-.16***										
9. Happiness	-.14***	.21***	.29***	.04***	.02*	.28***	.10***	-.33***									
Wave 8																	
10. Education	-.63***	.99***	.38***	.03**	-.15***	-.08***	.09***	-.19***	.21***								
11. Perceived Health	-.49***	.43***	.53***	-.003	-.13***	-.02	.11***	-.28***	.22***	.43***							
12. Physical activity	.06***	.03*	.04***	.24***	.06***	.07***	.06***	-.04***	.06***	.03*	.04***						
13. Leisure time	.16***	-.17***	-.10***	.02	.48***	.17***	-.04***	.01	.01	-.16***	-.10***	.04***					
14.Leisure satisfaction	.15***	-.10***	-.02	.05***	.18***	.29***	.02	.01	.17***	-.09***	.02*	.17***	.29***				
15. Social Leisure	.003	-.007	.03*	.04***	-.01	.05***	.18***	-.08***	.09***	-.01	.05***	.04***	.04***	.09***			
16. Depression	.24***	-.23***	-.30***	-.03*	.03**	-.01	-.10***	.40***	-.22***	-.23***	-.41***	-.04***	.04***	-.04***	-.06***		
17. Happiness	-.14***	.20***	.27***	.06***	.14	.16***	.08***	-.24***	.43***	.20***	.33***	.14***	.05***	.34***	.20***	-.34***	
Skewness	-0.31	-0.15	-0.59	1.75	1.12	-0.21	-0.53	1.28	-0.29	-0.15	-0.59	2.05	1.00	-0.07	-0.01	1.40	-0.32
Kurtosis	-0.70	-0.59	0.32	1.91	3.13	0.08	-1.72	1.37	0.29	-0.60	0.07	3.21	1.81	0.29	-2.00	2.08	0.38

*$p < .05$, **$p < .01$, ***$p < .001$; Education was measured as an ordinal variable but treated as continuous for analytical purposes.*

Supplementary Materials B

To investigate whether our main findings regarding social leisure can be extended to individuals with heightened psychological distress, such as depression, we conducted a series of additional analyses using data only from participants with CES-D scores above 15 at wave 7. This sub-sample consisted of 3,255 women (mean age = 19.95, SD = 16.06).

Results from the GEE analyses with this sample showed that social leisure predicted lower levels of depression across time in this sub-sample, B = -.53, p < .001, which aligns with our main findings. The significant interaction between social leisure and time indicated that the negative association between social leisure and depression weakened during the pandemic, B = -.53, p = .002,

again consistent with our main finding. In contrast, social leisure did not significantly predict happiness across time in this sub-sample, B = .07, p = .206, while the social leisure by time interaction was significant, B = .36, p < .001, indicating that the positive association between social leisure and happiness strengthened during the pandemic, relative to the pre-pandemic period. The detailed results are presented in Supplementary Table 2.

Results from multiple regression analyses using this subsample are largely consistent with our main findings. Social leisure before the pandemic predicted lower levels of depression during the pandemic, even after controlling for concurrent social leisure and previous depression, B = -.29, p < .001; however, it did not significantly predict happiness during the pandemic, B = -.02, p = .114 (Supplementary Table 3).

Supplementary Table 2. Generalized Estimating Equation for Social Leisure and Psychological Well-being with Multiple Imputed Data: A Sub-sample of Individuals with Heightened Depression at Wave 7

	B	95% CI		p
		LL	UL	
Outcome: depression				
Social leisure	-.53	-.77	-.29	< .001
Time	-.05	-.31	.21	.708
Social leisure × Time	.53	.19	.87	.002
Age	-.001	-.01	.01	.787
Education	-.10	-.20	-.01	.027
Perceived health	-1.05	-1.19	-.92	< .001
Physical activity (days/wk)	-.001	-.04	.03	.086
Leisure time (hr/wk)	-.013	.003	.02	.007
Leisure satisfaction	-.112	-.20	-.02	.014
Outcome: happiness				
Social leisure	.07	-.04	.18	.206
Time	.10	-.006	.20	.064
Social leisure × Time	.36	.22	.50	< .001
Age	.001	-.002	.01	.410
Education	.10	.07	.14	< .001
Perceived health	.41	.37	.45	< .001
Physical activity (days/wk)	.02	.01	.04	.003
Leisure time (hr/wk)	.004	.001	.01	< .001
Leisure satisfaction	.40	.37	.43	< .001

Social leisure (alone vs. having a companion[s]); Education was measured as an ordinal variable but treated as continuous for analytical purposes.

Supplementary Table 3. *Regression Model for Social Leisure and Psychological Well-being with Multiple Imputed Data: A Sub-sample of Individuals with Heightened Depression at Wave 7*

	B	95% CI		SE	t	p
		LL	UL			
Outcome: depression at wave 8						
Social leisure						
At wave 7	-.29	-.40	-.19	.05	-5.50	<.001
At wave 8	.15	.05	.26	.05	2.99	.003
Baseline	.12	.11	.13	.005	24.52	<.001
Age	-.01	-.02	-.01	.002	-6.08	<.001
Education	-.02	-.06	.03	.02	-.83	.407
Physical activity (days/week)						
At wave 7	-.02	-.04	.01	.01	-1.30	.193
At wave 8	-.01	-.03	.01	.01	-.79	.429
Leisure satisfaction						
At wave 7	.13	.09	.17	.02	5.95	<.001
At wave 8	-.09	-.14	-.04	.03	-3.71	<.001
Perceived health						
At wave 7	-.26	-.33	-.19	.03	-7.34	<.001
At wave 8	-1.01	-1.08	-.94	.03	-29.53	<.001
Leisure time (hr/week)						
At wave 7	-.70	-1.01	-.40	.16	-4.48	<.001
At wave 8	.59	.30	.87	.15	4.04	<.001
Outcome: happiness at wave 8						
Social leisure						
At wave 7	-.02	-.06	.01	.02	-1.46	.144
At wave 8	.38	.35	.42	.02	23.82	<.001
Baseline	.25	.24	.26	.01	44.69	<.001
Age	.003	.001	.004	.001	3.58	<.001
Education	.02	.005	.03	.01	2.60	.009
Physical activity (days/week)						
At wave 7	.01	-.003	.01	.004	1.29	.197
At wave 8	.03	.03	.04	.003	9.47	<.001
Leisure satisfaction						
At wave 7	.0004	-.01	.01	.01	.07	.947
At wave 8	.35	.33	.36	.01	43.78	<.001
Perceived health						
At wave 7	.09	.07	.11	.01	8.06	<.001
At wave 8	.36	.33	.38	.01	33.53	<.001
Leisure time (hr/week)						
At wave 7	-.03	-.12	.07	.05	-.60	.547
At wave 8	.06	-.03	.14	.05	1.24	.216

Social leisure (alone vs. having a companion[s]); Education was measured as an ordinal variable but treated as continuous for analytical purposes.