



Do More Leisure Time and Leisure Repertoire Make Us Happier? An Investigation of the Curvilinear Relationships

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Published online: 24 July 2019
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Abstract

Although the importance of leisure in promoting happiness has been well-documented in the literature, scant attention has been paid if more leisure is always associated with increased happiness or may result in leisure satiation. Using the panel data from 2016 Survey on National Leisure Activity from the Republic of Korea, this study investigated curvilinear relationships between leisure quantity, leisure repertoire, leisure satisfaction, and happiness. Our results showed that both weekday and holiday leisure quantities had inverted U-shape relationships with leisure satisfaction. Weekday leisure quantity also had an inverted U-shape relationship with happiness. However, leisure repertoire did not show curvilinear relationships with leisure satisfaction and happiness. Leisure satisfaction had a U-shape curvilinear relationship with happiness, and it also mediated the curvilinear relationships between weekday leisure quantity and happiness as well as holiday leisure quantity and happiness. We provided interpretations of our findings based on the existing literature, overwork culture in Korea, and cultural capital. Implications and suggestions for future research are discussed.

Keywords Leisure quantity · Leisure repertoire · Leisure satisfaction · Happiness · Leisure satiation

1 Introduction

There have been growing interests in the relationship between leisure and happiness. Due to the increased free time and disposable incomes propelled by industrialization and technological advancement, leisure has become an important, if not, central life domain in modern societies (Edginton et al. 2005; Russell 2013). As such, understanding the relationship between leisure and happiness has been an emerging scientific inquiry across a wide range of disciplines including economics, gerontology, health

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science, leisure science, psychology, sociology, and tourism (Kuykendall et al. 2015; Newman et al. 2014).

Prior studies have commonly identified that the frequency and quantity of leisure participation were positively associated with quality of life (Brajša-Žganec et al. 2011; Ku et al. 2016; Silverstein and Parker 2002; Tkach and Lyubomirsky 2006; Wang and Wong 2014). Moreover, researchers have introduced several theoretical explanations about how leisure contributes to subjective well-being (SWB). They suggested that leisure participation enhances SWB because it creates meaning in life, provides optimal arousal and sense of autonomy, makes participants to develop certain skills and knowledge, offers a respite, and promotes social interactions (Csikszentmihalyi 1990; Iwasaki 2007; Iwasaki and Smale 1998; Kleiber et al. 2002; Walker and Kono 2018).

Despite the empirical and theoretical contributions from the previous studies, three issues remain unaddressed. First, most prior studies have neglected the potential nonlinear relationships of leisure quantity to leisure satisfaction and happiness. Instead, they have heavily focused on positive linear relationships, suggesting that leisure satisfaction and happiness continue to improve indefinitely as the amount of leisure time increases. This analytic approach might be too simplistic to account the complex dynamics of leisure involvement. For example, some scholars have argued that too much leisure time that does not offer optimal arousal or psychological rewards is likely to lead leisure boredom, which exerts detrimental effects on life satisfaction (Campbell et al. 1976; Granzin and Haggard 2000; Iso-Ahola and Weissinger 1987, 1990). Pierce and Aguinis (2013) coined the term “too-much-of-a-good-thing (TMGT)” to describe the idea that more of a good thing is not always better. They suggested that the TMGT effect occurs “when ordinarily beneficial antecedents reach inflection points after which their relations with desired outcomes cease to be linear and positive” (p. 315). Thus, it is reasonable to expect that the positive effect of leisure quantity on leisure satisfaction and happiness is finite, and at some point, *leisure satiation* occurs.

The potential undesired effect of excessive leisure participation has been tested in only a few studies. For example, Ready et al. (2009) investigated a curvilinear association between physical activity and positive affect among young and older adults. They found that young adults’ positive affect increased up to a certain point as the participation in light physical activity increased and decreased after passing an inflection point. However, the investigation was limited to physical activity, and moderate and vigorous physical activities of young and older adults showed no significant curvilinearity with positive affect. Similarly, Schulz et al. (2018) identified nonlinear relationships between the frequency of leisure engagement and SWB. Using a response surface method and the data from an online survey, the study found a significant inverted U-shaped association between leisure engagement and overall SWB. Thus, continuing increase of leisure engagement did not infinitely enhance SWB, and in fact, excessive leisure engagement had a negative effect on SWB. However, Schulz et al. also noted that more than half of the study sample were high school and university students (65.7%, $n = 402$). Since both studies call for further investigation with diverse samples to draw a stronger and more generalizable conclusion, we developed the following hypotheses:

Hypothesis 1 Leisure quantity during (a) weekdays and (b) holidays will show an inverted-U shape curvilinear relationship with leisure satisfaction.

Hypothesis 2 Leisure quantity during (a) weekdays and (b) holidays will show an inverted-U shape curvilinear relationship with happiness.

Another remaining issue in the literature is that most previous studies have paid relatively little attention to the effect of leisure repertoire (or leisure diversity) on leisure satisfaction and happiness. Iso-Ahola (1980) defined leisure repertoire as “all activities a person considers potentially usable during his daily leisure” (p. 141). Thus, the concept denotes the library of leisure activities that people participate in or perceive to be available. The importance of leisure repertoire in leisure satisfaction and happiness can be explained in terms of cultural capital, substitutability, perceived freedom, and leisure boredom. Greater leisure repertoire indicates more knowledge, skills, and experiences in different activities. In other words, the concept reflects the amount of cultural capital that can be utilized to promote leisure satisfaction, enrich cultural lives, and establish valuable social networks (Bourdieu 1984, 1986; Guinn 1995; Stalker 2011). Moreover, individuals with greater leisure repertoire possess more options during free time and find a substitution more easily if the current leisure activity no longer provides positive experiences and rewards (Iso-Ahola 1980). This ability to diversify leisure experience, or the variation in leisure choices, can be liberating and prevent leisure boredom that negatively impacts life satisfaction (Granzin and Haggard 2000; Iso-Ahola and Weissinger 1987).

To date, only a handful of researchers examined the relationship between leisure repertoire, leisure satisfaction, and happiness. For example, Guinn (1995) found that the size of leisure repertoire was positively associated with leisure satisfaction of older adults. Loy et al. (2003) investigated the impact of the frequency, intensity, and repertoire of leisure involvement on the SWB of individuals with spinal cord injury. They identified that all three aspects of leisure involvement were positively correlated with SWB. Similarly, Dupuis and Smale (1995) reported that leisure repertoire exhibited a positive correlation with psychological well-being and negative association with depression. Likewise, Thornton and Collins (1986) and Silverstein and Parker (2002) found a positive association between the total number of leisure activities and life satisfaction of older adults. In a similar vein, Kim and Kim (2009) and Lee et al. (2016) operationalized cultural capital based on the diversity in leisure activities and examined its relationship with SWB. Consistent with other studies, they found that cultural capital (leisure repertoire) was positively associated with SWB.

Yet, the research on leisure repertoire has similar limitations to the studies of leisure quantity and SWB. First, this line of research has not examined nonlinear associations between leisure repertoire and leisure satisfaction or happiness. Citing Harvey’s (1976) experimental research, Iso-Ahola (1980) contended that too many leisure options are rather “confusing” than “liberating” and there is an “upper limit” where the number of leisure choices becomes excessive and unenjoyable (p. 195). However, this argument has not yet been tested empirically. To understand if such an “upper limit” really exists, we need to examine whether the positive effect of leisure repertoire on leisure satisfaction and happiness satiates. Moreover, most existing studies on leisure repertoire focused on specific population groups such as individuals with spinal cord injury and older adults. Thus, further investigation using a diverse sample would yield more generalizable findings. Accordingly, we developed the following hypotheses:

Hypothesis 3 Leisure repertoire will show an inverted-U shape curvilinear relationship with leisure satisfaction.

Hypothesis 4 Leisure repertoire will show an inverted-U shape curvilinear relationship with happiness.

Finally, the third issue in the literature is that previous studies have overlooked the potential nonlinear relationship between leisure satisfaction and happiness. More than three decades ago, Tinsley and Tinsley (1986) implied the existence of a nonlinear relationship between leisure satisfaction and happiness by postulating that the highest life satisfaction might be obtained when leisure satisfaction is slightly lacking. Based on Maslow's (1970) hierarchy of need model, Tinsley and Tinsley posited that "personal growth" such as self-actualization is the highest level of need, and leisure is more likely to satisfy this particular need compared to other activities. According to their argument, people fully contented with their lives would avoid making any changes and focus on maintaining the status quo. In this condition, people would pay "minimal attention to personal growth" so that their leisure domain would be left unsatisfied (p. 23). Thus, the authors stressed that high life satisfaction might be experienced when leisure satisfaction is not at the pinnacle but slightly lacking. To the best of our knowledge, no study has yet examined this potential nonlinearity between leisure satisfaction and happiness. Tinsley and Tinsley's proposition needs to be empirically tested to gain a better understanding about the relationship between leisure satisfaction and happiness. Thus, we developed the following hypothesis:

Hypothesis 5 Leisure satisfaction will show an inverted-U shape curvilinear relationship with happiness.

In addition to the aforementioned hypotheses, existing studies have documented that leisure satisfaction functions as a critical mediator between leisure participation and quality of life (Brown and Frankel 1993; Kuykendall et al. 2015; Newman et al. 2014). Newman et al. (2014) synthesized previous leisure studies and proposed a theoretical framework delineating the linkage between leisure participation, leisure satisfaction, and SWB. They argued that leisure experience that satisfies five psychological mechanisms—detachment-recovery, autonomy, mastery, meaning, and affiliation—increases leisure satisfaction, which in turn, enhances global SWB. Thus, once significant curvilinear relationships are found in the hypothesized associations, it would be worth investigating whether the mediating role of leisure satisfaction would still hold:

Hypothesis 6 Leisure satisfaction will mediate the curvilinear relationship between (a) weekday leisure quantity and happiness as well as (b) holiday leisure quantity and happiness.

Hypothesis 7 Leisure satisfaction will mediate the curvilinear relationship between leisure repertoire and happiness.

In sum, the purpose of this study is to fill the above research gaps by investigating nonlinear relationships between leisure quantity, leisure repertoire, leisure satisfaction, and happiness. We also aim to examine whether leisure satisfaction still mediates the nonlinear relationships between leisure quantity and happiness as well as leisure repertoire and happiness. To test our hypotheses and theoretical model (Fig. 1), we used national archival data from 2016 Survey on National Leisure Activity collected in the

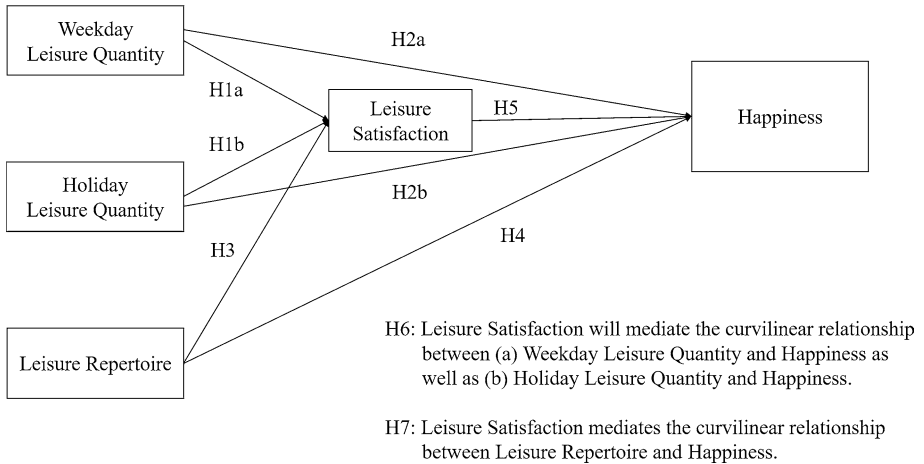


Fig. 1 Theoretical model and tested hypotheses

Republic of Korea. Through this study, we aim to better understand intricate relationships between leisure and happiness and make theoretical and empirical contributions to the literature.

2 Methods

2.1 Sample and Procedure

The Korean National Leisure Activity Survey (2016) is a nationally representative panel dataset collected by the Ministry of Culture, Sports and Tourism in the Republic of Korea. Trained staff visited households selected from the sampling frame of 2010 Population and Housing Census in Korea. This sampling frame was generated by stratified multistage cluster sampling. Korean households were first stratified into 72 strata based on three levels of administrative jurisdiction and regional characteristics such as population density and housing structure (e.g., apartment vs. family home). Subsequently, 1000 districts were selected from each stratum via systematic sampling and then 10 households from each district were randomly sampled. Trained staff visited the selected 10,000 households and requested participation in the survey. The responses were collected from September 1st to October 28th in 2016. The survey includes 44 questions about leisure participation and expenditure patterns, available leisure time and recreation facilities, life satisfaction, and demographic information. The total sample in this study includes 10,602 Korean citizens. Sequential regression imputation method was used by the Korean Ministry of Culture, Sports and Tourism to address missing data, which constituted less than 0.1% of the sample. The current study included the participants whose age ranges from 18 to 65 to capture the range of economically active populations. Detailed explanations of the sampling design and data collection are available from the final report of the 2016 Survey on National Leisure Activity (Ministry of Culture, Sports and Tourism 2016).

2.2 Measures

2.2.1 Leisure Quantity and Repertoire

At the beginning of the survey questionnaire, participants were presented with the definition of leisure as following: “leisure means free time obtained after work and other activities necessary for living (such as sleeping and eating). For example, unlike obligatory activities such as occupational work, commuting, housework, and taking classes, leisure means free time allocated for activities such as sport, pastime, and relaxing” (Ministry of Culture, Sports and Tourism 2016, p. 120). The definition captures the fundamental characteristics of leisure, discretionary activities during free time (Godbey 2008). Subsequently, two open-ended items were utilized to assess leisure quantity during weekdays and weekends/holidays, respectively: “For the past 1 year, what was your average daily leisure time during weekdays?” and “For the past 1 year, what was your average daily leisure time during weekends, holidays, and vacations?” In both questions, participants provided an average daily leisure time (hours) in numerical values. Leisure repertoire was operationalized as a count variable. Participants were asked to check all leisure activities they have participated in at least once during the past 1 year from a list of 85 leisure activities categorized into eight groups: appreciating cultural/art events, participating in cultural/art activities, watching sport events, playing sport, travel, entertainment and hobbies, resting activities, and social and other activities. “Appendix” provides a complete list of 85 leisure activities as well as eight leisure types. The total number of participated activities was summed up to measure the breadth of leisure repertoire.

2.2.2 Leisure Satisfaction

Leisure satisfaction was measured by a single item, “In general, are you satisfied with your leisure activities?” Participants provided their ratings on a Likert-scale from 1 (*very unsatisfied*) to 7 (*very satisfied*).

2.2.3 Happiness

Happiness was also measured by a single item with a reference of participants’ current emotional well-being, “How happy are you now?” Participants provided their ratings on a Likert-scale from 1 (*unhappy*) to 10 (*happy*).

2.2.4 Control Variables

Sex, age, marital status, education, employment, and average monthly income were entered in all models as control variables. Previous studies have shown significant relationships between these demographic variables and happiness (Lucas et al. 2003; Lucas and Schimmack 2009; Pavot and Diener 2013; Striessnig 2015; Winkelmann and Winkelmann 1998). Age was a continuous variable. Sex, employment, and marital status were dummy-coded (female = 0 and male = 1 for sex; unemployed = 0 and employed = 1 for employment; single or divorced = 0 and married = 1 for marital status). Education level was measured with an ordinal scale (no education = 1, elementary school = 2,

middle school=3, community college=4, four-year college=5, Master's degree=6, Ph.D. degree=7). Average monthly income was also reported on an ordinal scale, ranging from 1 (*no income*) to 12 (*10,000 thousand Korean Won*) with a 1000 thousand Korean Won interval.

2.3 Analyses

Path analyses were conducted using Mplus version 8.0 (Muthén and Muthén 2015) to test the mediation model where leisure satisfaction explains the relationships between leisure quantity, leisure repertoire, and happiness. To test the curvilinear effects, the squared terms of leisure quantity and leisure repertoire were entered in the models. Subsequently, mediation hypotheses were tested via bootstrapping procedure using 95% confidence intervals (CIs). The model included control variables such as sex, age, marital status, education, and monthly income.

3 Results

Tables 1 and 2 summarizes descriptive statistics and intercorrelations of all study variables. Consistent with past research, weekday leisure quantity, holiday leisure quantity, and leisure repertoire were positively correlated with leisure satisfaction ($r = .14, p < .01$; $r = .07, p < .01$; $r = .08, p < .01$) and happiness ($r = .06, p < .01$; $r = .08, p < .01$; $r = .12, p < .01$). The relationship between leisure satisfaction and happiness was also positive ($r = .41, p < .01$).

Table 3 presents the results of path analyses. For the linear terms, weekday and holiday leisure quantities had positive associations with leisure satisfaction ($\beta = .30, SE = .04, p < .01$; $\beta = .17, SE = .05, p < .01$). However, leisure repertoire was not significantly related with leisure satisfaction ($\beta = .05, SE = .04, p > .05$). Contrarily, weekday and holiday leisure quantities were not significantly associated with happiness ($\beta = .05, SE = .04, p > .05$; $\beta = .08, SE = .04, p > .05$). Meanwhile, leisure repertoire and leisure satisfaction had positive linear associations with happiness ($\beta = .12, SE = .04, p < .01$; $\beta = .15, SE = .06, p < .01$).

Table 1 Descriptive statistics of study variables

	Minimum	Maximum	Mean	SD
Sex	0	1	.49	.50
Age	18	65	42.31	13.24
Marital status	0	1	.68	.47
Education	1	8	4.73	1.09
Monthly income	1	12	3.21	1.90
Employment	0	1	.67	.47
Leisure quantity: weekdays	0	12	2.98	1.46
Leisure quantity: holidays	0	18	4.99	2.35
Leisure repertoire	2	58	17.75	7.53
Leisure satisfaction	1	7	4.53	1.14
Happiness	1	10	7.09	1.38

Table 2 Correlations of study variables

	1	2	3	4	5	6	7	8	9	10
1. Sex										
2. Age	-.04**									
3. Marital status	-.09**	.61**								
4. Education	.12**	-.42**	-.15**							
5. Monthly income	.49**	.21**	.17**	.15**						
6. Employment	.32**	.17**	.09**	.02*	.75**					
7. Leisure quantity: weekdays	-.07**	.08**	-.01	-.12**	-.17**	-.19**				
8. Leisure quantity: holidays	.07**	-.06**	-.11**	-.01	.03*	.02	.57**			
9. Leisure repertoire	.03*	-.20**	-.09**	.21**	.04**	.02	.08**	.15**		
10. Leisure satisfaction	.01	.04**	.00	.06**	-.02*	-.08**	.14**	.07**	.08**	
11. Happiness	-.04**	-.01	.05**	.10**	.02	-.01	.06**	.08**	.12**	.41**

* $p < .05$; ** $p < .01$

Table 3 Effects of leisure quantity and leisure repertoire on leisure satisfaction and happiness

Variable	Leisure satisfac- tion		Happiness	
	β	<i>S.E.</i>	β	<i>S.E.</i>
Intercept	2.58**	.11	3.50**	.13
Control variable				
Sex	.02	.01	-.06**	.01
Age	.12**	.02	-.05**	.02
Marital status	-.05**	.01	.09**	.01
Education	.10**	.01	.06**	.01
Employment	-.12**	.02	.03	.02
Monthly income	.04*	.02	.02	.02
Predictor				
Leisure quantity: weekdays	.30**	.04	.05	.04
Leisure quantity: weekdays ²	-.19**	.04	-.08*	.03
Leisure quantity: holidays	.17**	.05	.08	.04
Leisure quantity: holidays ²	-.18**	.04	-.02	.04
Leisure repertoire	.05	.04	.12**	.04
Leisure repertoire ²	.01	.04	-.06	.04
Leisure satisfaction	-	-	.15**	.06
Leisure satisfaction ²	-	-	.27**	.06
Total R ²	.049**		.133**	

All results came from a full model that includes all variables

* $p < .05$; ** $p < .01$

3.1 Hypotheses Testing

Hypotheses 1a and 1b respectively stated that weekday and holiday leisure quantities would show inverted U-shape curvilinear relationships with leisure satisfaction. Both hypotheses were supported, such that the square terms of weekday and holiday leisure quantities had significant incremental effects on leisure satisfaction beyond their linear effects ($\beta = -.19$, $SE = .04$, $p < .01$; $\beta = -.18$, $SE = .04$, $p < .01$). The visual representation of the associations between leisure quantities and leisure satisfaction are shown in Fig. 2. Both weekday and holiday leisure quantities exhibited inverted U-shape relationships with leisure satisfaction, indicating that more leisure engagement does not always lead to higher leisure satisfaction. The most ideal quantities of leisure engagement for leisure satisfaction were 6.56 h during weekdays and 5.79 h during holidays.

Hypotheses 2a and 2b respectively stated that weekday and holiday leisure quantities would show inverted U-shape curvilinear relationships with happiness. The results revealed that the square term of weekday leisure quantity was significant ($\beta = -.08$, $SE = .03$, $p < .05$), while holiday leisure quantity was not ($\beta = -.02$, $SE = .04$, $p > .05$). Therefore, Hypothesis 2a was supported while Hypothesis 2b was not. Figure 3 depicts the curvilinear relationship between weekday leisure quantity and happiness, and its inflection point was 3 h.

Hypothesis 3 posited that leisure repertoire would show an inverted U-shape curvilinear relationship with leisure satisfaction. However, there was not a significant

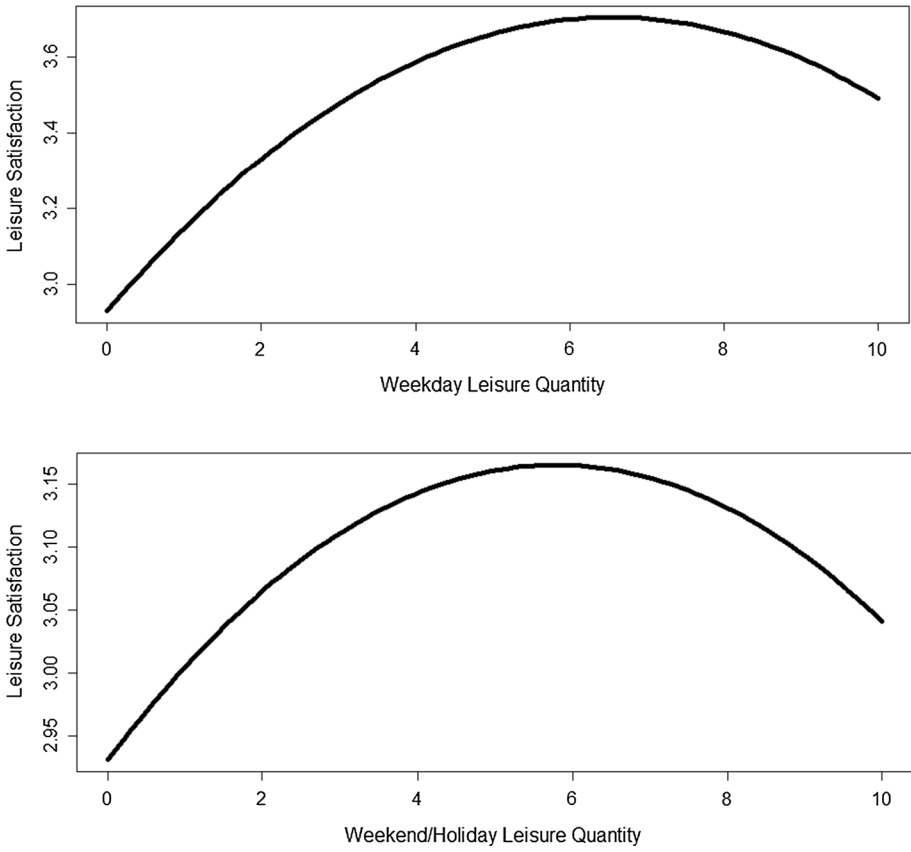


Fig. 2 Curvilinear relationships between leisure quantities and leisure satisfaction

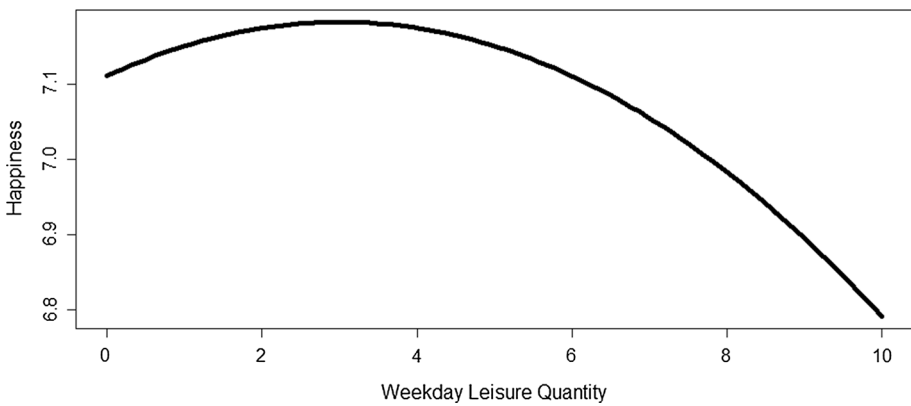


Fig. 3 Curvilinear relationship between weekday leisure quantity and happiness

incremental effect of the quadratic term of leisure repertoire ($\beta = .01$, $SE = .04$, $p = .76$). Therefore, Hypothesis 3 was not supported. Further, Hypothesis 4 predicted an inverted U-shape curvilinear relationship between leisure repertoire and happiness. As the effect of the quadratic term for leisure repertoire on happiness was not significant ($\beta = -.06$, $SE = .04$, $p = .15$), Hypothesis 4 was not supported.

Hypothesis 5 postulated that leisure satisfaction would show an inverted U-shape curvilinear association with happiness. The path analysis revealed that leisure satisfaction has a significant nonlinear relationship with happiness ($\beta = .27$, $SE = .06$, $p < .01$). However, unlike our hypothesized direction, the nature of the relationship was not reflected as an inverted U-shape. Rather, the relationship indicated an exponential increase of happiness (U-shape) in response to the increase in leisure satisfaction (Fig. 4). Therefore, Hypothesis 5 was not supported.

Based on the findings from H1 to H5, we further investigated Hypothesis 6, the possible mediation effect of leisure satisfaction on the relationship between weekday and holiday leisure quantities and happiness. We could not test Hypothesis 7 since leisure repertoire did not exhibit significant curvilinear relationships with leisure satisfaction and happiness. Using bootstrapping method (Preacher and Hayes 2008), we separately conducted mediation analyses for Hypothesis 6a (weekday leisure quantity \rightarrow leisure satisfaction \rightarrow happiness) and Hypothesis 6b (holiday leisure quantity \rightarrow leisure satisfaction \rightarrow happiness). For Hypothesis 6a, consistent with the prior literature, the results showed a significant indirect effect of leisure satisfaction on the linear relationship between weekday leisure quantity and happiness (Estimate = .060, 95% CI = .005–.118, $p < .05$), as well as the curvilinear relationship at $-.040$ (95% CI = $-.082$ to $-.003$, $p < .05$). Similarly, for Hypothesis 6b, leisure satisfaction significantly mediated the linear association between holiday leisure quantity and happiness (Estimate = .063, 95% CI = .006–.125, $p < .05$) as well as the curvilinear relationship at $-.052$ (95% CI = $-.105$ to $-.005$, $p < .05$). Therefore, both Hypothesis 6a and 6b were supported, indicating that the mediating role of leisure satisfaction holds not only in the linear relationships but also in the curvilinear relationships between weekday and holiday leisure quantities and happiness.

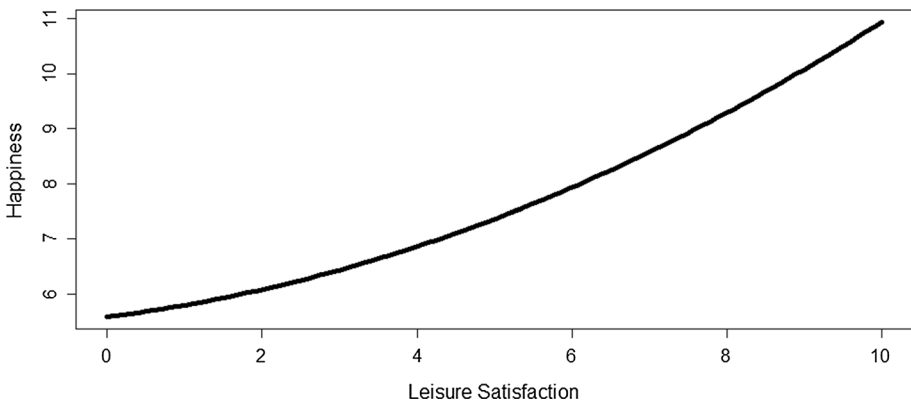


Fig. 4 Curvilinear relationship between leisure satisfaction and happiness

3.2 Differential Validity of Eight Leisure Types

Beyond the investigation on the effect of leisure quantity and repertoire on leisure satisfaction and happiness, we also examined the effects of different leisure types on leisure satisfaction and happiness. Research has shown that the positive effect of leisure on life satisfaction varied by activity type (Brown et al. 1991; Brajša-Žganec et al. 2011; Wang and Wong 2014). As the current dataset from the Korean National Leisure Activity Survey (2016) includes a wide range of leisure activities that are categorized into eight leisure types (refer to “Appendix”), it would be worth examining which leisure type has a stronger effect on leisure satisfaction and happiness. Thus, we entered the eight leisure types as predictors to explain the variability in leisure satisfaction and happiness in a supplementary path analysis (Table 4). Each leisure type was operationalized as a count variable. The results showed that playing sport and travel had positive associations with leisure satisfaction ($\beta = .10$, $SE = .01$, $p < .01$; $\beta = .10$, $SE = .01$, $p < .01$). Similarly, participating in cultural/art activities such as writing, painting, taking pictures, and playing musical instruments was positively associated with leisure satisfaction ($\beta = .03$, $SE = .01$, $p < .01$). The Model explained 4.8% of the variance in leisure satisfaction. Model 4 showed that playing sport, travel, and social and other activities were positively associated with happiness ($\beta = .06$, $SE = .01$, $p < .01$; $\beta = .15$, $SE = .01$, $p < .01$; $\beta = .04$, $SE = .01$, $p < .01$). However, watching sport events and resting activities were negatively associated with happiness ($\beta = -.04$, $SE = .01$, $p < .01$; $\beta = -.05$, $SE = .01$, $p < .01$). The Model explained 4.4% of the variance in happiness.

Table 4 Effects of different leisure activities on leisure satisfaction and happiness

Variable	Leisure satisfaction		Happiness	
	β	S.E.	β	S.E.
Intercept	3.29**	.01	4.55**	.09
Control variable				
Sex	.01	.01	-.03*	.01
Age	.16**	.02	.00	.02
Marital status	-.06**	.01	.05**	.01
Education	.09**	.01	.09**	.01
Employment	-.13**	.02	-.02	.02
Monthly income	.02**	.02	.03	.02
Leisure type				
Appreciating cultural/art events	-.00	.01	.01	.01
Participating in cultural/art activities	.03**	.01	-.01	.01
Watching sport events	-.02	.01	-.04**	.01
Playing sport	.10**	.01	.06**	.01
Travel	.10**	.01	.15**	.01
Entertainment and hobbies	.03	.02	-.02	.02
Resting activities	-.09	.01	-.05**	.01
Social and other activities	-.02	.01	.04**	.01
Total R ²	.048**		.044**	

* $p < .05$; ** $p < .01$

4 Discussion

Leisure scholars have hypothesized curvilinear relationships between leisure participation, leisure satisfaction, and happiness (Campbell et al. 1976; Granzin and Haggard 2000; Iso-Ahola 1980; Iso-Ahola and Weissinger 1987, 1990; Tinsley and Tinsley 1986). However, extant studies have rarely examined these ideas and they have been dominated by investigations on linear relationships. The present study attempted to bring this largely overlooked research topic into a sharper focus. The study findings illustrated complex and nuanced relationships between leisure participation and happiness that were not captured by previous studies.

We found that weekday and holiday leisure quantities had significant curvilinear relationships with leisure satisfaction and happiness. The adverse effect of leisure quantities on leisure satisfaction was evident as illustrated in the inverted U-shape associations in Fig. 2. Leisure satiation occurred when people had more than 6.56 h of weekday leisure and 5.79 h of holiday leisure. The leisure satiation was also identified in the relationship between weekday leisure quantity and happiness. Figure 3 indicated that happiness started to decline with more than 3 h of leisure time during weekdays and the decline was further accelerated after around 6 h of leisure participation. These findings were consistent with previous studies that excessive leisure participation deteriorated leisure satisfaction and SWB (Campbell et al. 1976; Granzin and Haggard 2000; Iso-Ahola and Weissinger 1987, 1990; Ready et al. 2009; Schulz et al. 2018). Thus, the present study confirmed the existence of leisure satiation and the TMGT effect.

The leisure satiation illustrated in Fig. 3 is worthy of further elaboration. How do we account the accumulative negative effect of weekday leisure quantity on happiness? The answer may lie in the societal pressure stemming from the notorious overwork culture in South Korea. The country is known as the most overworked nation in Asia (Haas 2018, February 28). Organization for Economic Cooperation and Development (OECD 2018) reported that on average, South Koreans work 2069 h in 2016, the third most overworked country among the economically comparable countries. Despite its connections with cardiovascular diseases, depression, anxiety, sleep disturbance, and even suicide (Jang et al. 2015; Virtanen et al. 2009, 2011), overwork is still ubiquitous and almost taken for granted in Korean society (Murphy 2018, June 28). Given this rather peculiar social condition, it is possible that having leisure time during weekdays creates a sense of guilt and stress from being unproductive.

The finding raises another important question; why did some people participate in leisure beyond the inflection point despite of its negative effect on happiness? Although further empirical investigation is necessary to address this question, the concept of income satiation sheds a distinctive insight. Similar to leisure satiation identified in this study, researchers have found that the positive effect of income on SWB satiated at some point (Diener and Biswas-Diener 2002; Jebb et al. 2018; Kahneman and Deaton 2010). However, many people are highly motivated to increase their income and the rich would hardly view making less money as a viable option to become happier in the modern consumerism (Schor 1999; Zhang et al. 2016). In fact, the rich tend to have a higher income aspiration than the poor (Stutzer 2004). Similarly, one proposition could be made that since free time is seldom available in the country of overwork, South Koreans who had more than the inflection point of leisure hours are reluctant to give up their leisure and want to gain more of it.

We found mixed results about leisure repertoire. As shown in Table 3, leisure repertoire showed no significant linear or curvilinear relationship with leisure satisfaction, yet it had a significant linear relationship with happiness. Although these findings did not support Iso-Ahola's (1980) conceptualization that too many leisure choices might be adverse to leisure satisfaction, the importance of leisure repertoire in happiness was evident. Moreover, path coefficients showed that leisure repertoire was the second most important predictor of happiness next to leisure satisfaction.

The significant positive relationship between leisure repertoire and happiness might be explained by the importance of cultural capital in today's social stratification. Researchers have noted that class distinction in contemporary society has gradually shifted from the Marxian emphasis on economic capital to cultural omnivorousness because of the rise of living standards and education levels, enhanced access to diverse cultural activities via online platforms, and greater tolerance towards different values (Bourdieu 1984; López-Sintas and Katz-Gerro 2005; Peterson and Kern 1996; Warde et al. 1999). As such, more people, especially in the upper class, have begun to appreciate diverse leisure activities and cultures (Lee et al. 2016). Notably, Kim and Kim's (2009) study showed that the diversity of cultural experience had a greater impact on respondents' happiness than health. Thus, the positive effect of leisure repertoire on happiness might be a reflection of the increasing importance of cultural capital in Korean society.

Our findings confirmed the importance of leisure satisfaction in happiness. Leisure satisfaction mediated both linear and curvilinear relationships between leisure quantity and happiness. Additionally, its path coefficient showed the most substantial effect on happiness compared to other independent variables in the study. In other words, leisure satisfaction was more likely to improve happiness than the amount of leisure time or the variety of leisure activities. This finding is consistent with previous studies that leisure satisfaction is a critical determinant of happiness and more important than leisure participation (Brown and Frankel 1993; Brown et al. 1991; Lu and Hu 2005; Ragheb and Griffith 1982). This finding also supported the bottom-up model of SWB which posits that satisfaction in various life domains, such as leisure, can additively contribute to SWB (Diener 1984; Diener et al. 1999).

Further, as displayed in Fig. 4, leisure satisfaction exhibited a concave-up relationship with happiness so that the rate in which happiness increases increased as leisure satisfaction increased. To the best of our knowledge, no previous studies have reported this curvilinear relationship between leisure satisfaction and happiness. The exponential increase of happiness highlights the importance of leisure satisfaction, yet it is in sharp contrast with Tinsley and Tinsley's (1986) assertion that people experience higher life satisfaction when leisure satisfaction is not too high. The findings from more recent studies may explain this gap. For instance, unlike Tinsley and Tinsley's proposition, studies have found that leisure is not the only source of self-actualization and other activities such as occupation and learning can also satisfy this need (Kiel 1999). Moreover, several studies have questioned the validity of Maslow's hierarchy of needs model because they found that different levels of needs could be satisfied simultaneously and the satisfaction of basic needs such as food, safety, and belongingness was not the prerequisite of activating self-actualization (Hanley and Abell 2002; Neher 1991).

Finally, the effect of leisure participation on leisure satisfaction and happiness varied by activity type (Table 4). Playing sport and travel showed significant positive associations with leisure satisfaction and happiness. These findings are consistent with previous studies documenting the positive effects of physical activity and travel on life satisfaction (Brown and Frankel 1993; Chen and Petrick 2013; Chen et al. 2016; Ku et al. 2016; Mitas

et al. 2017). However, we found that watching sport events and resting activities had significant negative effects on happiness. These findings were somewhat unexpected because previous studies have commonly documented positive effects of leisure on happiness and Wang and Wong (2014) reported that attending sporting events and listening to music were positively associated with happiness. On the one hand, the conflicting results might stem from the way the Survey on National Leisure Activity categorized different leisure activities. For example, the survey grouped both watching sport at a stadium and on TV into the same category (see “Appendix”) even though they are drastically different leisure experiences. On the other hand, the negative effects of the two types of leisure might be because respondents tended to experience leisure boredom in these passive activities so that the lack of optimal arousal and unsatisfied psychological needs negatively impacted happiness.

We advise cautious interpretations of our findings with consideration of three limitations. First, we found that leisure quantity and repertoire explained only 4% of the variance in leisure satisfaction. This small effect size indicated that the model was less robust and there were more critical determinants of leisure satisfaction than our independent variables. Some of those determinants may be psychological and social benefits of leisure participation (Csikszentmihalyi 1990; Iwasaki 2007; Iwasaki and Smale 1998; Kleiber et al. 2002; Newman et al. 2014; Walker and Kono 2018). Regrettably, we were unable to incorporate those rewards since they were not available in the dataset. Future studies are encouraged to incorporate these qualitative aspects of leisure participation. Second, while our sample included individuals with various demographic characteristics, it was collected in South Korea only. Since happiness is specific to cultural context (Diener and Suh 2000; Tov and Diener 2007; Ye et al. 2015), the geographic homogeneity of our sample needs to be taken into account in interpreting study findings. Finally, the national survey used a single-item to measure happiness. Researchers provided mixed findings about a single-item measurement. For instance, although Cummins (2013) mentioned that single-item measures of happiness or life satisfaction are psychometrically inferior to multi-item scales because they generate more error variance, other researchers found high construct and criterion-related validities of single-item measures, such that they performed very similarly compared to multi-item measures (Abdel-Khalek 2006; Cheung and Lucas 2014).

5 Conclusion

This study investigated curvilinear relationships between leisure quantity, leisure repertoire, leisure satisfaction, and happiness. Using the dataset from 2016 Survey on National Leisure Activity from the Republic of Korea, a series of statistical analyses were conducted to test six hypotheses. Weekday and holiday leisure quantities had significant curvilinear relationships with leisure satisfaction and happiness. Leisure repertoire had a significant curvilinear relationship with happiness, yet not with leisure satisfaction. Thus, the existence of leisure satiation was confirmed. Moreover, leisure satisfaction had the strongest effect on happiness compared to other independent variables in the current study and had a U-shaped curvilinear relationship with happiness. By all accounts, the present study sheds fresh insight into the literature by illustrating the complex interplay between leisure and happiness that was not documented by previous studies. Further investigation in this area is recommended as leisure continues to play a vital role in our well-being. More research will not only expand our knowledge base in the subject area, but help leisure professionals to design recreation programs that effectively satisfy participants’ needs.

Appendix

A. Appreciating cultural/art events

1. Attending exhibitions (arts, photographs, architectures, designs, etc.)
2. Going to museums
3. Attending concerts (classical music, opera, etc.)
4. Attending traditional performing arts (traditional music, traditional play, etc.)
5. Watching plays.
6. Watching dance performances.
7. Watching movies.
8. Watching entertainment performances (show, concert, magic show, etc.)

B. Participating in cultural/art activities

9. Attending literary events.
10. Writing/literary discussions.
11. Art activities (drawing, calligraphy, engraving, designing, forming ceramics, drawing cartoons, etc.)
12. Playing instruments/singing class.
13. Learning traditional arts (Samul-nori, tightrope walking, etc.)
14. Taking a picture (includes digital camera).
15. Dance (ballet, Korean traditional dance, modern dance, etc.)

C. Watching sport events

16. Watch sport at a stadium (soccer, baseball, basketball, volleyball, etc.)
17. Watching sport on TV (soccer, baseball, basketball, volleyball, etc.)
18. Watching martial arts.
19. Directly watching online game (includes e-sports).

D. Playing sport

20. Playing basketball, volleyball, baseball, soccer, football.
21. Playing tennis, squash.
22. Playing billiards, pocket ball.
23. Playing bowling, ping-pong.
24. Playing golf.
25. Swimming.
26. Wind surfing, water skiing, skin scuba, diving, rafting, riding a yacht.
27. Snowboarding, skiing, etc.
28. Ice skating, ice hockey, etc.
29. Working out (body building)/aerobics.
30. Yoga/Pilates/Tae Bo.
31. Badminton/jump roping/stretching/gymnastics/hula hoop.
32. Track and field/jogging/fast walking.
33. Martial arts (Taekwondo, judo, aikido, kendo, boxing, etc.)
34. Sport dance (Tango, waltz, jive, mambo, cha cha cha, etc.)

35. Cycling/mountain bike.
36. Inline skating.
37. Horse riding, rock climbing, triathlon, survival.

E. Travel

38. Visiting cultural heritage (old palace, temple, cultural heritage, etc.)
39. Looking at the nature view or scenery.
40. Woods bathing.
41. Domestic camping.
42. International camping.
43. Picnic.
44. Spa/bathing.
45. Going on a cruise.
46. Going to theme park/amusement park/zoo/botanical garden.
47. Attending local festivals.
48. Taking a drive.

F. Entertainment and hobbies

49. Collecting.
50. Crafts (cross-stitch, beads craft, DIY, flower arrangement).
51. Cooking/enjoying tea.
52. Taking care of pets.
53. Going to karaoke.
54. Interior (home, car, etc.)
55. Hiking.
56. Fishing.
57. Blogging.
58. Web searching/online chat/creating a video/social media.
59. Game (internet, Nintendo, PSP, PS3, etc.)
60. Board game/puzzle/Rubik's cube.
61. Go/Janggi (Korean Chess)/Chess.
62. Gambling (horse racing, keirin, casino, playing cards, go stop, Mahjong game, etc.)/buying lottery ticket.
63. Shopping/eating out.
64. Drinking.
65. Reading books/reading cartoons.
66. Beauty (skin care, hair care, nail arts, massage, plastic surgery, etc.)
67. Studying language/skills/certificate- going to academy.

G. Resting activities

68. Taking a walk.
69. Taking a bath/sauna/steam room.
70. Taking a nap.
71. Watching TV (including IPTV).
72. Watching a video (DVD).
73. Listening to a radio.
74. Listening to the music.

75. Reading a newspaper/magazine.
76. Doing nothing.

H. Social and other activities

77. Community service activities.
78. Religious activities.
79. Clubbing/night club/disco/cabaret.
80. Visiting family and friends.
81. Talking/calling/texting.
82. Group meeting/class reunion.
83. Dating/meeting/blind date.
84. Meeting friends/club meeting.
85. Other activities that are not listed above.

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