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The Influence of Leisure Engagement on Daily Emotional Well-being

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Abstract

Leisure engagement is believed to offer emotional benefits. However, relatively few studies have examined how leisure engagement influences emotional well-being in the context of individuals' everyday lives. The current study examined the associations between leisure engagement and daily emotional well-being, as measured by participants' mean levels of positive affect (PA), PA variability, and PA reactivity to stressors. Using smartphones, participants (n = 176) completed ecological momentary assessments (EMAs) 5 times per day for 14 consecutive days. The Pearson correlations indicated that the participants who engaged in leisure more frequently experienced higher mean levels of PA and lower PA variability in daily life compared to those with less frequent leisure engagement. However, multilevel models indicated that individuals' differences in frequency of leisure engagement did not influence their emotional reactivity in response to daily stressors. The findings extend the importance of leisure engagement to consider the dynamics of daily emotional well-being.

Keywords

leisure benefits; positive affect; affect variability; emotional reactivity; ecological momentary assessment

Introduction

Leisure engagement, which is defined as engagement in enjoyable activities during the time free from obligations or responsibilities (Pressman et al., 2009), has demonstrable benefits for emotional well-being (Newman, Tay, & Diener, 2014). One way that leisure engagement is beneficial is that it promotes positive mental states that foster the accumulation of

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Declaration of Competing Interest

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psychological resources (e.g., building social support, increasing optimism; Mitas, Qian, Yarnal, & Kerstetter, 2011). Drawing on the broaden-and-build theoretical framework (Fredrickson, 2001), Denovan and Macaskill (2017) suggested that leisure engagement can help individuals develop psychological resources, which in turn enhance positive affect (PA) and counteract the experience of stress. Indeed, individuals who maintain high levels of and stable (i.e., low variability) PA exhibit better mental and physical health than individuals with lower levels of and more variable PA (Gruber, Kogan, Quoidbach, & Mauss, 2013). Another way that leisure engagement leads to emotional well-being is by buffering individuals from the effects of stress (Coleman & Iso-Ahola, 1993; Iwasaki & Mannell, 2000). In particular, individuals' emotional responses to everyday stress are predictive of long-term mental and physical health (Piazza, Charles, Sliwinski, Mogle, & Almeida, 2013), and leisure engagement is related to more positive emotional profiles (Qian, Yarnal, & Almeida, 2013). However, relatively few studies have examined how leisure engagement relates to individuals' emotional experiences and responses to stress in the context of their everyday lives. To this end, this study examines how leisure engagement affects individuals' experiences of PA in their everyday lives and how it may moderate the effects of daily stress on the individuals' PA levels.

Leisure Engagement and the Development of Psychological Resources

Psychological resources are "characteristics that people draw upon to help them withstand threats posed by events and objects in their environment" (Pearlin & Schooler, 1978, p. 5). An important way that psychological resources are accumulated is through the experiencing of positive emotions (Tugade, Fredrickson, & Barrett, 2004). The broaden-and-build theory suggests that experiencing positive emotions can "broaden people's momentary thought-action repertoires and build their enduring personal resources" (Fredrickson, 2001, p. 3). During the broadening process, positive emotions expand individuals' attention and actions (Fredrickson, 2001). These broadened scopes of attention and actions may help individuals cope effectively with stressors because they enable the individuals to step back from their current situations and reappraise the stressors from various angles (Fredrickson & Joiner, 2002). During the building process, on the other hand, positive emotions help individuals develop a variety of personal resources, such as social resources (e.g., friendships; Aron, Norman, Aron, McKenna, & Heyman, 2000), psychological resources (e.g., resilience; Fredrickson, Tugade, Waugh, & Larkin, 2003), and physical resources (e.g., physical skills; Danner, Snowdon, & Friesen, 2001). These personal resources, and especially psychological resources, enhance individuals' coping abilities and contribute to emotional well-being (Fredrickson, 2001).

Leisure engagement often increases positive emotions and triggers the accumulation of psychological resources, which in turn positively contributes to emotional well-being by the broaden-and-build process (see Figure 1; Carruthers & Hood, 2007; Chang, Yarnal, & Chick, 2016). For example, Mitas et al. (2011) found that participants broadened their thoughts and actions (e.g., meeting new people, trying new activities) and built resources (e.g., social support, optimism) while experiencing leisure, which in turn helped them cope with stressors such as partner loss and caregiving demands. More recently, Denovan and Macaskill (2017) suggested that leisure coping was associated with PA, counteracting

perceived stress and promoting well-being. This, too, is consistent with the broaden-and-build theory. Together, leisure engagement can help individuals develop psychological resources through the broaden-and-build process, which may lead to higher levels of emotional well-being and buffer against stress over time.

PA is an important type of emotional well-being that can be strengthened by leisure engagement, according to the broaden-and-build theory (Hood & Carruthers, 2002). PA refers to the subjective experience of positive feelings such as joy, interest, or contentment (Fredrickson, 2001). Although individuals' global reports of their PA (e.g., how they feel in general or how they have felt over the previous month) tend to be positively correlated with frequency of engagement in leisure (Hicks & Siedlecki, 2017; Pressman et al., 2009), little is known about how leisure engagement relates to how people experience PA in everyday life. Given that PA is dynamic and varies over time, information derived from multiple time point assessments in everyday life can be informative (Zautra, Affleck, Tennen, Reich, & Davis, 2005). In addition, few researchers have focused on how leisure engagement influences PA variability, which is a construct that captures the degree to which an individual's level of PA varies over time (Jenkins, Hunter, Cross, Acevedo, & Pressman, 2018; Ram & Gerstorf, 2009). Studies have suggested that greater PA variability is associated with lower life satisfaction and more depressive symptoms (Gruber et al., 2013), more psychological distress (Hardy & Segerstrom, 2016), and a stronger immune response to influenza vaccination (Jenkins et al., 2018). Understanding how leisure engagement impacts daily PA and PA variability may help to explain the association between leisure and emotional well-being in the context of individuals' everyday lives.

Leisure Engagement and Buffers from Emotional Responses to Daily Stressors

Daily stressors refer to "routine challenges, such as the everyday concerns of work, caring for other people, and commuting between work and home" (Almeida, 2005, p. 62). Although daily stressors are less intense than stressful major life events, they are linked with adverse same-day health-related outcomes, which can accumulate to negatively impact long-term health (Almeida, Piazza, Stawski, & Klein, 2011). A growing body of research has suggested that on days when individuals encounter stressors, they report lower levels of PA, higher levels of negative affect (Almeida, 2005; Mroczek et al., 2015), greater frequency of memory problems (Rickenbach, Condeelis, & Haley, 2015), and poorer cardiovascular function (Sin, Sloan, McKinley, & Almeida, 2016) than they do on stressor-free days.

Although daily stressors matter, emotional reactivity to stressors—that is, how individuals emotionally respond to these negative experiences—seems to be especially crucial to long-term health-related outcomes (Sin, Graham-Engeland, Ong, & Almeida, 2015). Piazza et al. (2013) suggested that a higher magnitude of acute emotional reactivity in response to daily stressors can lead to worse long-term physical health. Similarly, Charles, Piazza, Mogle, Sliwinski, and Almeida (2013) found that individuals whose inferred emotional states were more affected by the experience of daily stressors had an increased risk of affective distress and affective disorders 10 years later than those who were less affected by the experience of daily stressors. Given that a lack of emotional stability in the face of stressors may lead to poor health outcomes, understanding how health behaviors such as leisure engagement as

a way for individuals to buffer themselves from emotional reactivity to daily stressors may provide useful information on long-term physical and mental health outcomes.

Relatively little work has examined the relationship between leisure engagement and emotional reactivity to daily stressors. In one of the first studies on this topic, Qian et al. (2013) showed that increases in the amount of free time available daily for enjoyable activities helped individuals cope with daily stressors. Their findings provide evidence for theoretical models that suggest leisure can be a stress buffer for individuals who have experienced a life crisis (e.g., Coleman & Iso-Ahola, 1993; Iwasaki & Mannell, 2000); that is, participating in enjoyable activities (e.g., taking a vacation, participating in sports with friends, listening to relaxing music) during free time may reduce the negative effects of stress on the individuals' well-being (Coleman & Iso-Ahola, 1993; Hutchinson, Bland, & Kleiber, 2008; Iwasaki & Mannell, 2000). Tugade et al. (2004) similarly suggested that developing psychological resources through healthy behaviors, such as habitual engagement in leisure, can be seen as a proactive or protective approach that may reduce emotional reactivity in response to stressors. Indeed, individuals who more frequently engage in leisure tend to have more effective self-regulation to facilitate stress coping and maintain PA compared to those who less frequently engage in leisure (Patry, Blanchard, & Mask, 2007). However, Qian et al. (2014) further suggested that adults' (n = 2,022) differences in the average amount of free time they have daily for enjoyable activities did not moderate the effects of stressors on PA across eight days' worth of diary data. Although Qian and colleagues' study (2014) showed little agreement regarding the effects of leisure engagement on emotional reactivity to daily stressors, the authors called for more studies examining the effects of leisure on daily emotional well-being, such as emotional reactivity to daily stressors. Our study is a response to this call, extending the results of Qian et al. (2014) by examining PA reactivity to stressors over a more finely grained time scale (e.g., a single day, multiple hours).

Study Purpose and Research Hypotheses

The purpose of the current study was to examine the associations between leisure engagement and daily emotional well-being, as measured by mean levels of PA, PA variability, and PA reactivity, in response to daily stressors over 14 days of EMAs in a diverse probability sample of adults. In recent years, EMAs have been become a popular form of data collection in the field of leisure and recreation because they can reduce recall biases and capture how leisure behavior interacts with emotional well-being in individuals' everyday lives (Scott, Wozencroft, & Waller, 2019). Given that PA is a time-varying construct, in this study, EMAs were used to distinguish variance that differentiated among individuals with higher or lower frequencies of leisure engagement from the variance that differentiated among multiple measurement moments nested within individuals.

In sum, a total of three research hypotheses were examined in the study:

H1: Individuals who report participating more frequently in leisure activities experience higher mean levels of PA in their daily lives compared to individuals who report participating less frequently in leisure activities.

H2: Individuals who report participating more frequently in leisure activities experience lower levels of PA variability in their daily lives compared to individuals who report participating less frequently in leisure activities.

H3: Individuals who report participating more frequently in leisure activities experience smaller decreases in PA in response to daily stressors compared to individuals who report participating less frequently in leisure activities.

Method

We used data from the *Effects of Stress on Cognitive Aging, Physiology and Emotion* (ESCAPE) project, a longitudinal study that collected intensive repeated measures of its titular variables at multiple time scales. Because ESCAPE did not measure variables of leisure engagement during the first wave, we restricted our use of the study's data to the second wave. Most participants completing the second wave participated in 2014. Further information on the study protocol can be found in Scott et al. (2015).

Participants

A sampling frame was developed based on New York City Registered Voter Lists (RVL) obtained from the Board of Elections. A racially and economically diverse sample of participants were recruited via systematic probability sampling of New York City's registered voter lists for the zip code 10475 (Bronx, NY). The sample included 176 adults (67% women) aged 25–66 years (*Mean* = 47.83, *SD* = 11.21). The participants were representative of the sampling area (race-ethnicity: Non-Hispanic White: 9.04%, Non-Hispanic Black: 65.54%, Hispanic White: 17.51%, Hispanic Black: 3.95%, Asian: 0.56%, Other: 3.39%). As the race-ethnicity distribution suggests, a relatively high percentage of the participants were Non-Hispanic Black, offering a unique "minority-majority" perspective in the study. The sample was diverse in terms of participants' education levels (Less than high school: 6.25%, Completed high school or received GED: 18.18%, Some college: 28.98%, College degree: 28.98%, Graduate or professional degree: 17.61%) and annual incomes (< $4,999: 8.02%; $5,000-$19,999: 19.75%; $20,000-$39,999: 24.69%; $40,000- $59,999: 15.43%; $60,000- $79,999: 17.90%; $80,000- $99,999: 4.32%; $100,000- $149,000: 9.26%; > $150,000: 0.62%).

Measures

Data about leisure engagement and demographics (e.g., age, gender, education, and work status) from the baseline questionnaire and data about PA and stressors from the momentary assessment were used to examine the research hypotheses.

Leisure engagement.—The Pittsburgh Enjoyable Activities Test (PEAT; Pressman et al., 2009) was used to measure participants' baseline frequency of enjoyable activities. Participants were given a list of enjoyable activities (10 items) and asked to rate how often they had spent time doing each of the activities in the previous month: (1) spending quiet time alone; (2) spending time unwinding at the end of the day; (3) visiting friends and/or relatives; (4) going out for meals with friends and/or relatives; (5) doing fun things

with others; (6) doing club, fellowship, and religious group participation; (7) going away on holiday/vacation; (8) being in outdoor settings such as gardens, parks, countryside; (9) actively engaging in physical activity (e.g., walking, sports, hiking); and (10) involving in hobbies. The response scale ranged from 1 (Never), 2 (Occasionally), 3 (Quite often), 4 (Frequently), to 5 (Everyday). The PEAT scores were calculated as the sum of responses (range = 10 to 50) and centered at the sample mean (24.93). The Cronbach α test indicating the reliability of the 10 items was 0.84, indicating reasonable reliability (Cortina, 1993). Pressman et al. (2009) reported that most items were loaded > 0.40 on the PEAT scale, suggesting that the PEAT scale encompasses many different types of enjoyable activities. Their study also demonstrated the adequate reliability and validity of the PEAT scale, which can be used for testing the associations between the PEAT and multiple psychological outcomes (e.g., PA, negative affect, perceived stressful life events).

Momentary PA.—PA was calculated as the average of each participant's ratings of four PA items: happy, enjoyable, joyful, and pleased (Diener & Emmons, 1984). For each PA item, participants responded to the question, "How____ do you feel right now?" The PA items were assessed using a slider that ranged from 0 (Not at all) to 100 (Extremely), with higher scores indicating greater PA. PA variability was operationalized by computing each individual's standard deviation (*iSD*) from their own mean level of PA (Ram & Gerstorf, 2009).

Momentary stressors.—Momentary stressors were assessed by asking participants to select 1 (Yes) or 0 (No) in response to the question, "Did anything stressful occur since the last survey? A stressful event is any event, even a minor one, which negatively affected you" (Almeida, Wethington, & Kessler, 2002).

Covariates.—Age, gender, education, and work status were assessed in the mailed baseline questionnaire and were included as covariates. The covariates were coded as follows. Age (centered at the sample mean) was verified using the participants' dates of birth. Gender was coded as male = 1, female = 2. Education (centered at the sample mean) was coded as less than high school diploma = 0, high school diploma or some college = 1, and college degree or higher = 2. Work status was coded as employed = 1, retired = 2, unemployed and looking for work = 3, and unemployed and not looking for work = 4.

Data Collection Procedures

There were three phases of data collection in the second wave of the ESCAPE: baseline surveys, EMA practice, and smartphone surveys. We describe each phase of data collection below.

Baseline surveys.—Participants were mailed a baseline survey to complete at home. The questionnaire was intended to assess the participants' demographics and their frequency of leisure engagement. Participants were required to visit a laboratory for specific training on how to use their smartphones as part of the forthcoming EMA protocol.

EMA practice.—During the EMA practice phase, participants returned the baseline survey; they also learned how to operate the specially programmed smartphones (Droid X) during their laboratory visit. Participants practiced taking the smartphone survey (described in the Measures section) with trained research assistants. The participants were then asked to complete a two-day EMA data collection during which they became familiar with the protocol. After these two days, participants returned to the laboratory and their compliance with study protocol was calculated. Those participants who completed 80% or more of the smartphone surveys during the EMA practice phase were invited to complete 14-day smartphone surveys.

Smartphones surveys phases.—Participants took short smartphone surveys 5 times per day for 14 consecutive days. The average amount of time between the smartphone surveys was approximately 2.5 hours. At particular times during the day, the smartphone produced an audible alert (“beep”) signaling participants to complete the smartphone surveys about their recent experiences and psychological states such as stressors and current affects. Participants completed each smartphone survey around 2 minutes and 59 seconds. To prevent participants from anticipating the beeps, the beeps were scheduled with quasi-random timing. Participants’ smartphone survey responses were stored on the smartphones and data were sent to a secure server upon completion of all survey. At the end of the 14 days, the participants returned the smartphones to the laboratory. Each participant who had completed the entire protocol received $160.

Data Analysis

Data analysis was conducted using SAS PROC MIXED (version 9.4) and IBM SPSS 25.0 (Chicago, IL). Incomplete data were treated as missing at random. Statistical significance was evaluated at $\alpha = 0.05$.

Between-person correlations.—We conducted Pearson correlation analyses to examine whether individuals who reported participating more frequently in leisure activities experienced higher mean levels of PA (H1) and lower levels of PA variability (H2) in their daily lives compared to individuals who reported participating less frequently in leisure activities. Using Pearson correlation analyses allowed us to confirm the relationship among leisure engagement, momentary PA, and momentary PA variability. For the analyses, we calculated each participant’s average momentary PA and PA variability across 14 days.

Multilevel models.—We used multilevel models (Snijders & Bosker, 1999) to examine whether individuals who reported participating more frequently in leisure activities experienced smaller decreases in PA in response to daily stressors compared to individuals who reported participating less frequently in leisure activities (H3). Using multilevel models enabled us to capture whether leisure engagement moderated the association between stressors and levels of PA at the momentary level. Each person’s average percentage of stressful events across 14 days ($Stressors\_pmn_i$) was included in the model. To make the values more interpretable, the momentary-level stressor was centered by subtracting each individual’s average percentage of stressful events across 14 days ($Stressors\_pmn_i$) from the individual’s stressor. Equations (1–3) offer a description of the multilevel models.

Level 1 (Within-Person) Model

$$\mathrm{PA}_{it} = \beta_{oi} + \beta_{1i}\mathrm{Stressors}_{it} + e_{it} \quad (1)$$

Equation (1) in the Level 1 Model specifies the within-person changes in PA as a function of changes in stressors in daily life. The PA for person i at time t is a function of an intercept parameter for person i (across the t times for which the person provided data), β_{oi}; a slope parameter that captures momentary fluctuation in stressors for person i, β_{1i}; and the within-individual random error, e_{it}.

Level 2 (Between-Person) Model

$$\beta_{oi} = \gamma_{00} + \gamma_{01}\mathrm{Leisure}_i + \gamma_{02}\mathrm{Stressors\_pmn}_i + \gamma_{03}\mathrm{Age}_i + \gamma_{04}\mathrm{Gender}_i + \gamma_{05}\mathrm{Education}_i + \gamma_{06}\mathrm{Work\ status}_i + u_{0i} \quad (2)$$

$$\beta_{1i} = \gamma_{10} + \gamma_{11}\mathrm{Leisure}_i + u_{1i} \quad (3)$$

Equations (2) and (3) in the Level 2 Model describe between-person differences (e.g., frequency of enjoyable activities) in within-person change. The between-person intercept and coefficient are expressed as a function of a fixed intercept, fixed slope, and a between-person error term for intercept u_{0i} and slope u_{1i}, respectively. γ_{00} indicates the intercept of PA for a person with average momentary stressors; γ_{01} refers to the effect of frequency of enjoyable activities on the initial level of PA for person i; γ_{02} refers to the effect of average momentary stressors on the initial level of PA for person i; γ_{03} to γ_{06} reflect the effects of control variables (age, gender, education, and work status, respectively) on the initial level of PA for person i; u_{0i} indicates the error of β_{oi}; γ_{10} indicates the slope of PA on momentary stressors; γ_{11} refers to the slope of PA on momentary stressors with an interactive effect of frequency of enjoyable activities; and u_{1i} indicates the error of β_{1i}.

Results

Descriptive Statistics

A total of 1,972 stressors were reported across the study. Each participant reported having at least one stressor on 43% of the 14 total days and in 17% of responses to smartphone surveys. Table 1 displays means, standard deviations, and correlations of the study variables. Momentary measures (i.e., PA and stressors) were averaged across all measurements to compute the between-person correlations. As shown in Table 1, participants reported moderate PA (M = 58.71 on a 0–100 scale) and moderate leisure engagement (M = 24.93 on a 10–50 scale). Age was correlated positively with leisure engagement (r = 0.21, p < .01) and average momentary PA (r = 0.24, p < .001), indicating that older adults tended to report more frequent leisure engagement and higher levels of PA than younger adults. Higher age was not associated with increased reporting of stressors (r = −0.01, p > .05). After adjusting for all covariates (age, gender, education, and work status), average momentary PA was correlated negatively with PA variability (r = −0.24, p < .001). The number of stressors

experienced and leisure engagement showed no association ($r = -0.05$, $p > .05$), adjusting for all covariates.

Research hypothesis 1: Individuals who participate more frequently in leisure activities experience higher mean levels of PA in their daily lives.

Leisure engagement was found to be moderately correlated with mean levels of PA ($r = 0.35$, $p < .001$; Cohen, 1988), adjusting for all covariates. Individuals who participated more frequently in leisure activities experienced higher mean levels of PA in everyday life. The results are displayed in Table 1 and Figure 2.

Research hypothesis 2: Individuals who participate more frequently in leisure activities experience lower levels of PA variability in their daily lives.

As shown in Table 1 and Figure 3, leisure engagement was negatively correlated with PA variability ($r = -0.23$, $p < .01$), adjusting for all covariates. That is, individuals who participated more frequently in leisure activities experienced lower levels of PA variability in everyday life.

Research hypothesis 3: Individuals who participate more frequently in leisure activities experience smaller decreases in PA in response to daily stressors in their daily lives.

Table 2 displays the results from our multilevel models examining leisure engagement and momentary stressors as predictors of momentary PA. Engagement in leisure activities did not moderate the associations between momentary stressors and momentary PA ($p > .05$), adjusting for all covariates. That is, the effect of experiencing a stressor on PA did not differ among individuals with varying levels of leisure engagement. Figure 4 shows that individuals with either more or less frequent leisure engagement did not have elevated PA when stressors occurred.

Discussion

The current study investigated the association between leisure engagement and daily emotional well-being in 176 adults from diverse backgrounds. Our findings based on EMA data collected over a 14-day period suggest that more frequent leisure engagement was associated with higher mean levels of PA and lower PA variability in daily life compared to less frequent leisure engagement. However, individuals' differences in leisure engagement did not influence their emotional reactivity in response to daily stressors. Our model, which was drawn on the broaden-and-build theoretical framework to illustrate the relationships between leisure engagement and daily emotional well-being, is shown in Figure 5.

Our findings contribute to leisure literature in the following ways. First, our findings provide empirical evidence that individuals who engage in leisure activities more frequently enjoy higher average levels of experienced PA in everyday life. This finding is consistent with those of other studies examining the association between leisure engagement and PA based on the broaden-and-build theory (Denovan & Macaskill, 2017). It is also in line with Newman and colleagues' (2014) argument that positive feelings are "based on a weighting of key life domains such as leisure" (p. 558). The researchers indicated that engaging

in leisure might lead to an aggregation of positive feelings by strengthening individuals' multiple psychological resources, such as autonomy, mastery, and affiliation. Additionally, our findings support the Leisure and Well-being Model proposed by Carruthers and Hood (2007), which indicates that leisure engagement is linked to positive emotions that set the stage for the development of psychological resources that in turn promote everyday well-being. As such, individuals who participate more frequently in leisure activities may perceive themselves as having psychological resources, which subsequently leads to their perception of higher mean levels of PA compared to those who participate less frequently in leisure.

Second, our findings indicate that people who more frequently engage in leisure tend to have less variability in PA in their daily lives. This finding is consistent with those of other studies showing that more positive leisure experiences are associated with a more stable emotional life, which is characterized by emotional regulation (Freire & Teixeira, 2018). Indeed, emotional regulation can be enhanced by taking vacations, suggesting that travel experiences are opportunities to regulate emotions by sharing emotions and maintaining good relationships with significant others (Gao, Kerstetter, Mowen, & Hickerson, 2018). In addition, researchers have demonstrated that highly resilient individuals tend to have greater control over their emotional stability (Ong, Bergeman, Bisconti, & Wallace, 2006) and have proposed that resilience is a psychological resource for emotional regulation (Hildebrandt, McCall, Engen, & Singer, 2016). Leisure engagement may play a role in cultivating resilience by the broaden-and-build process (Chang et al., 2016), which in turn increases individuals' emotion regulation abilities and promote PA stability.

Third, our findings indicate that leisure engagement did not minimize the effects of reactions to stressors on PA in daily life. These results support Qian and colleagues' (2014) finding that the amount of leisure time does not influence individuals' emotional responses to stressors in daily life. There are several possible explanations for these findings. One is that leisure engagement may help individuals develop psychological resources at particular times during the recovery process in response to stressors and threats (Hutchinson et al., 2008; Newman et al., 2014), since individuals' reactions to stressful events are immediate (Dickerson & Kemeny, 2004). That is, the precise timing of leisure engagement may be important in its ability to affect stress-buffering mechanisms. Research has shown that positive experiences generated by uplifting events (i.e., having fun, socializing) can have buffering effects during stressful events (Sin & Almeida, 2018; Sin, Ong, Stawski, & Almeida, 2017). Another potential explanation for the findings is that the everyday stressors individuals reported in the current study did not reach a level of severity sufficient for leisure engagement to exhibit buffering effects. Coleman and Iso-Ahola (1993) argued that "leisure impacts health by providing buffering mechanisms that come into play when life presents significant problems. On the other hand, when life stress is relatively low leisure's contribution to health is expected to less substantial" (p. 113). Perhaps leisure engagement buffers individuals from the stress caused by major adverse life events rather than that caused by minor daily hassles. Future studies might examine how the effects of leisure are related to stressor severity.

Limitations

There are some limitations that should be considered when interpreting the present results. First, due to the use of secondary data, leisure engagement was measured at a baseline before the 14 consecutive days of data collection. Thus, we were unable to test key mechanisms of the Leisure and Health Model (Coleman & Iso-Ahola, 1993) by assessing the longitudinal effects of leisure engagement after periods of stress response. Future studies might determine whether individuals' emotional reactivity to stressors can be buffered by engaging in leisure using a finer-grained time scale (e.g., across hours) measured by EMAs. Second, the PEAT is a brief self-rating tool that may not accurately represent a broad array of leisure activities. The PEAT only indicates individuals' frequency of engagement in a certain spectrum of enjoyable activities. Additionally, some overlap is possible among the PEAT items (e.g., doing fun things with others versus engaging in physical activity). Thus, further studies using a more detailed list of enjoyable activities performed at different frequencies are warranted. Finally, the current study is a cross-sectional study and cannot be taken as determining causality. Future studies using experimental designs to examine affect and stressors are recommended to develop a more robust understanding of the moderating role of leisure in daily experiences.

Conclusion

In sum, our findings provide further evidence that leisure engagement is related to emotional well-being (Coleman & Iso-Ahola, 1993; Iwasaki & Mannell, 2000; Newman, Tay, & Diener, 2014). Whereas previous research has focused on the associations between leisure engagement and its benefits on emotional well-being, as determined by global assessments, this study considered leisure engagement's benefits for emotional well-being in the context of individuals' everyday lives using an EMA-based approach. The findings supported the broaden-and-build theory (Fredrickson, 2001), which suggests that leisure engagement may have beneficial consequences (increasing mean levels of PA and lowering PA variability) for daily emotional well-being. Additionally, leisure engagement did not minimize emotional reactivity to daily stressors, suggesting that the timing of leisure engagement appears to matter because of its ability to buffer against negative experiences in daily life. These findings show the importance of leisure engagement to the dynamics of daily emotional well-being.

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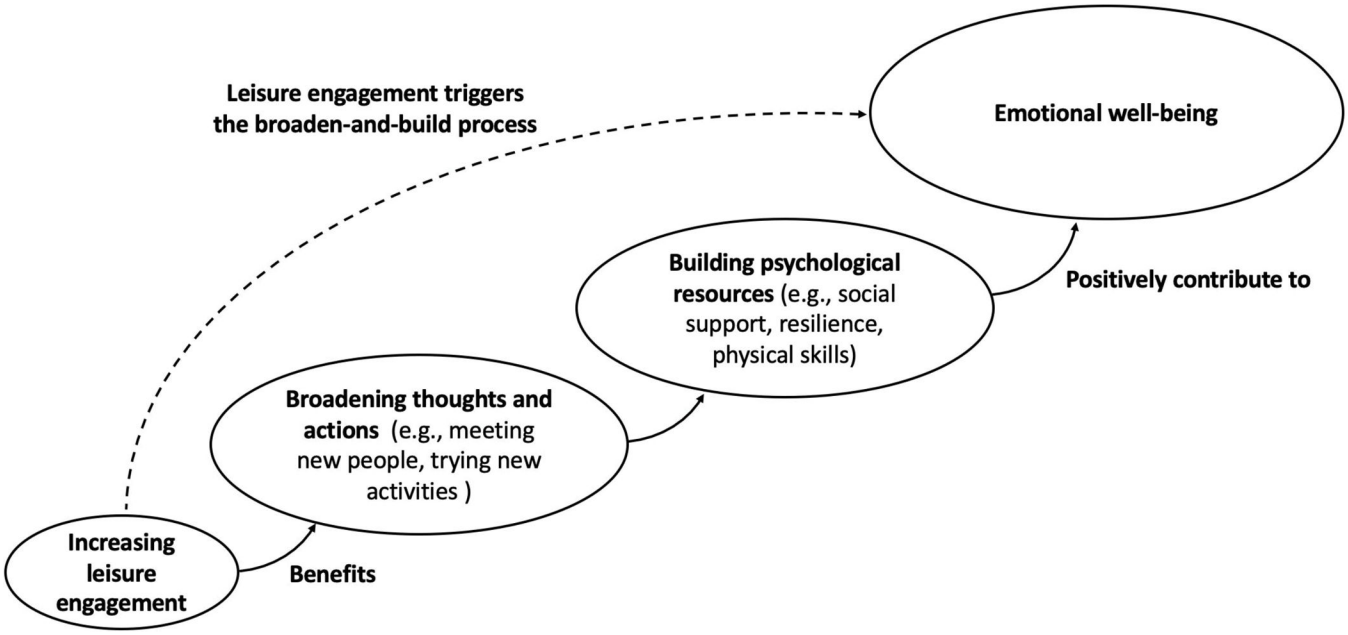

Figure 1.
Leisure engagement triggers the broaden-and-build process.

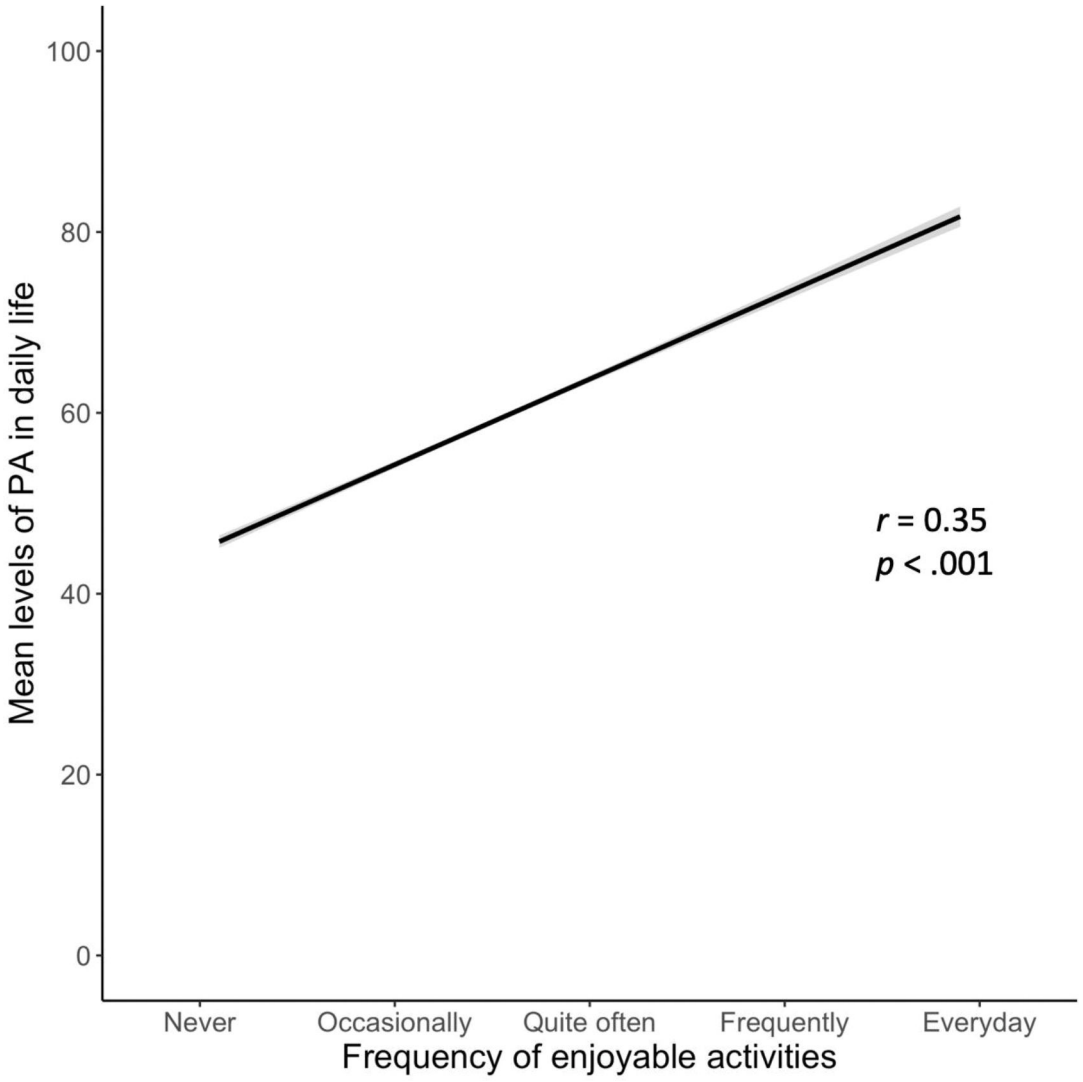

Figure 2.

Relationship between leisure engagement (mean frequency of leisure activities) and mean levels of PA in daily life. Higher frequencies of enjoyable activities were correlated with higher mean levels of PA in daily life after adjusting for all covariates. PA = Positive affect.

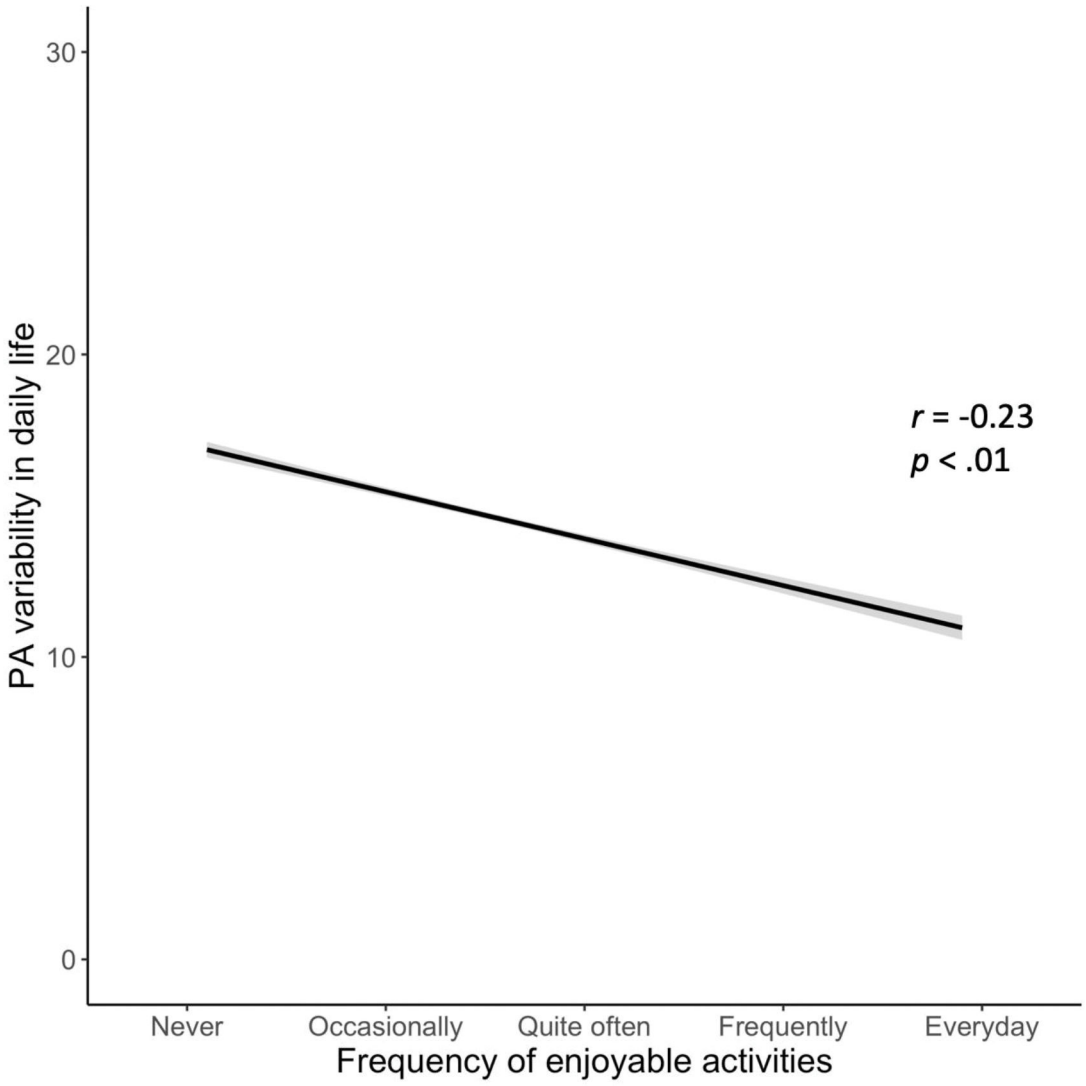

Figure 3.

Relationship between leisure engagement (mean frequency of leisure activities) and PA variability in daily life. Higher frequencies of enjoyable activities were correlated with lower PA variability in daily life after adjusting for all covariates. PA = Positive affect.

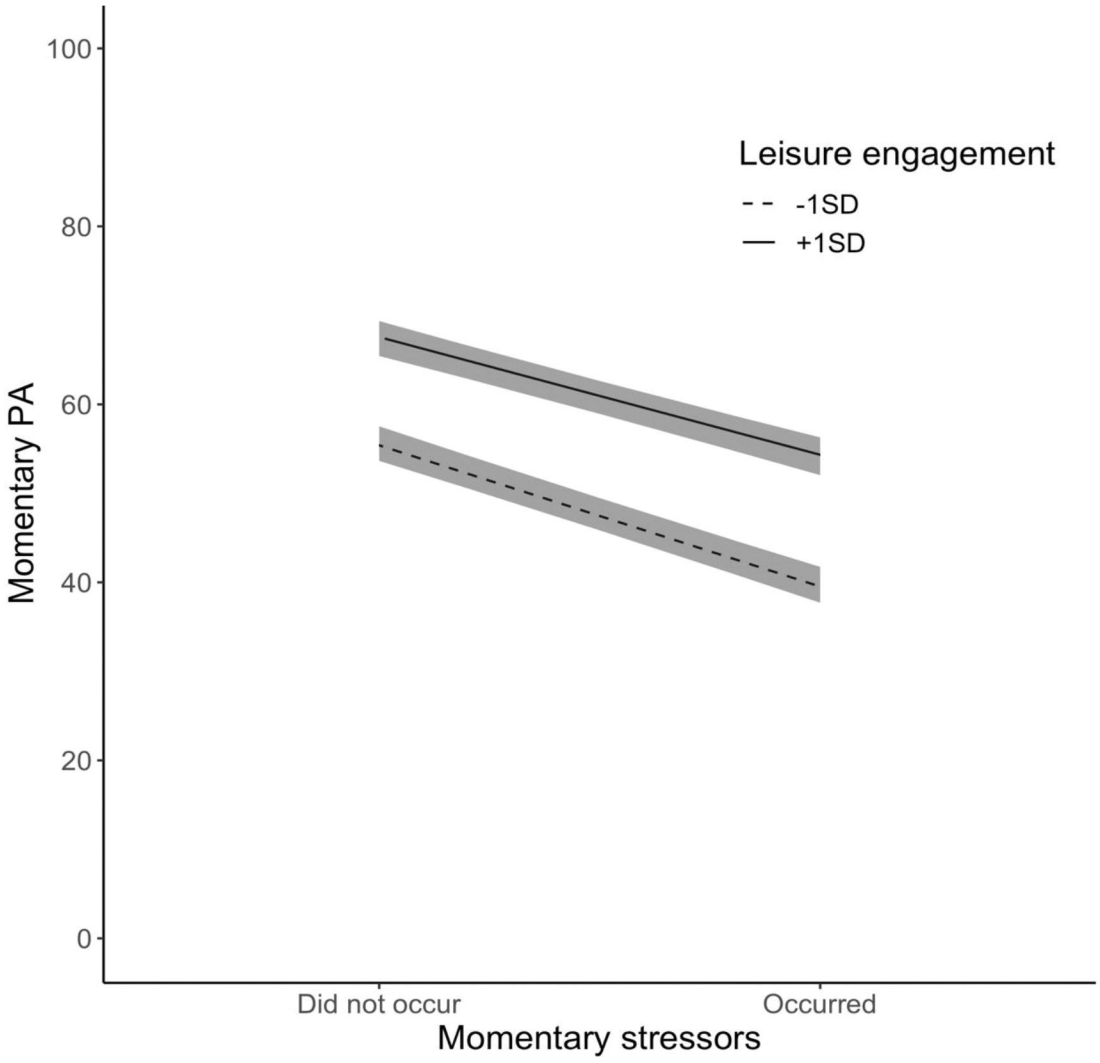

Figure 4.

Relationship of leisure engagement and PA reactivity to stressors in daily life. Momentary PA was predicted by momentary stressors × leisure engagement after adjusting for all covariates (Table 2). Individuals with either more (above one standard deviation) or less (below one standard deviation) frequent leisure engagement did not experience elevated PA when stressors occurred. The grey shading reflects the standard error of either more or less frequent leisure engagement. PA = Positive affect; SD = Standard deviation.

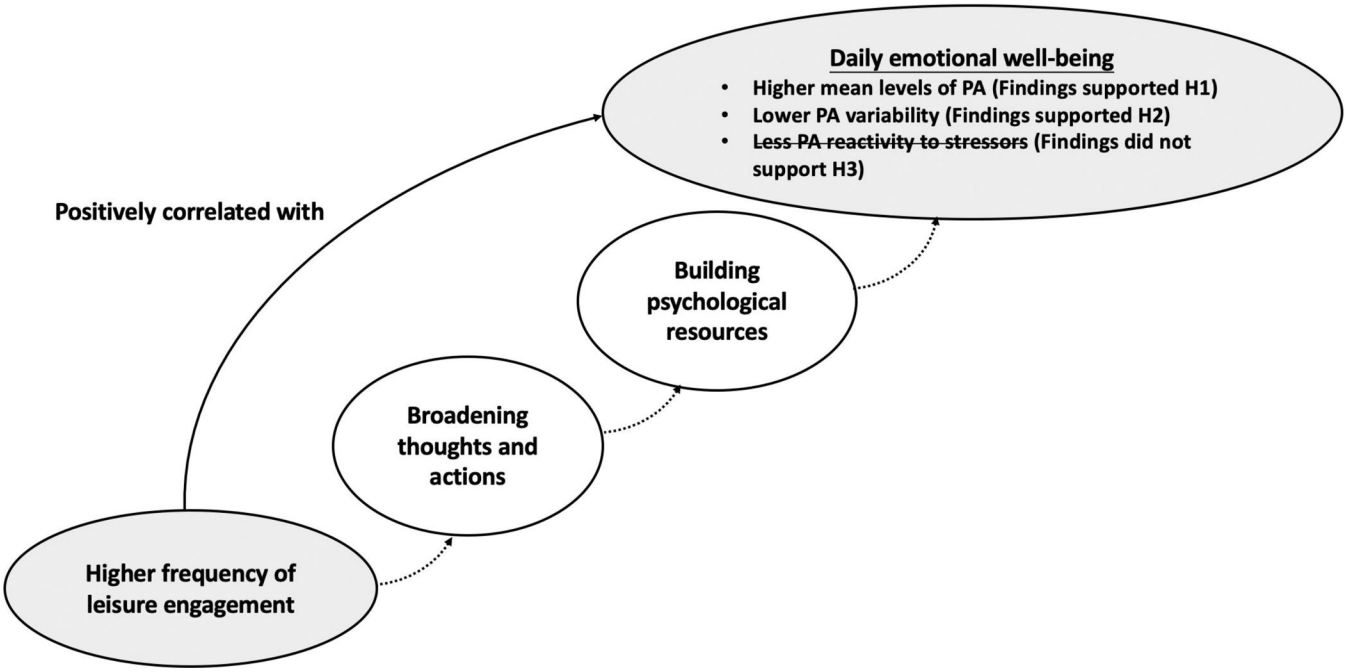

Figure 5.

Theoretical model of current study results. H = Research hypotheses in the current study; PA = Positive affect.

Table 1.

Descriptive Statistics and Correlations

	1	2	3	4	5	6	7	8
1. Age	—	0.01	0.12	0.09	0.21**	0.24**	−0.19*	−0.01
2. Gender	—	—	0.01	−0.06	−0.02	−0.01	0.11	−0.05
3. Education	—	—	—	−0.23**	0.09	−0.10	−0.08	0.18*
4. Work status	—	—	—	—	0.06	0.14	−0.07	−0.20**
5. Leisure engagement	—	—	—	—	—	0.37***	−0.27**	−0.05
6. PA [b]	—	—	—	—	0.35***	—	−0.24**	−0.21**
7. PA variability [b]	—	—	—	—	−0.23**	−0.24**	—	0.29***
8. Stressors [b]	—	—	—	—	−0.05	−0.15	0.31***	—
M	47.83	1.67	1.40	2.02	24.93	58.71	15.29	0.17
SD	11.21	0.47	0.61	1.10	7.05	18.68	7.14	0.18

Notes. Below the diagonal are correlation coefficients controlled for covariates (age, gender, education, and work status). Above the diagonal are correlation coefficients that did not control for covariates. *M* = mean; *SD* = standard deviation; PA = positive affect

[a]Mean value reflects average taken for each individual

[b]Mean value reflects average taken across days and beeps for each individual.

*$p < .05$

**$p < .01$

***$p < .001$.

Table 2.

Multilevel Models Predicting Momentary PA: Coefficient (Standard Error)

	Momentary PA	
Fixed Effects		
Intercept	57.81***	(4.01)
Age	0.30*	(0.12)
Gender	−0.20	(2.68)
Education	−2.78	(2.18)
Work status	0.46	(1.21)
Momentary stressors	−14.57***	(1.16)
Average momentary stressors	−14.94**	(6.55)
Leisure engagement	0.76***	(0.22)
Momentary stressors × Leisure engagement	0.18	(0.22)
Random Effects		
Variance intercept	301.51***	(34.64)
Variance stressors	153.23***	(22.90)
Covariance intercept and stressors	−90.47***	(22.69)
Residual variance	247.34***	(3.37)
−2LL	93583.0	
AIC	93591.0	

Notes. N = 176. *SE* = standard errors; PA = positive affect; LL = log-likelihood; AIC = Akaike information criterion.

** $p < .01$

*** $p < .001$.