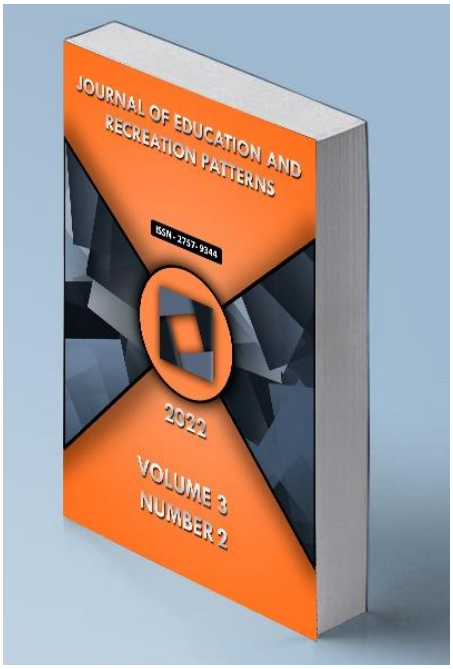

Journal of Education and Recreation Patterns (JERP)

www.jerpatterns.com

Investigating Recreation Activity Type on College Students' Subjective Well-being and Leisure Satisfaction

Danny Twilley[1], W. Hunter Holland[2], Laura Morris[3]

To cite this article:

Twilley, D., Holland, W. H., & Morris, L. (2022). Investigating Recreation Activity Type on College Students' Subjective Well-being and Leisure Satisfaction. *Journal of Education and Recreation Patterns (JERP), 3*(2), 175-192. DOI: https://doi.org/10.53016/jerp.v3i2.73

[1] Danny Twilley, West Virginia University, danny.twilley@mail.wvu.edu,
https://orcid.org/0000-0002-9637-2030
[2] W. Hunter Holland, University of North Carolina Wilmington, hollandw@uncw.edu,
https://orcid.org/0000-0002-8557-1640
[3] Laura Morris, University of North Carolina Wilmington, morrisl@uncw.edu,
https://orcid.org/0000-0002-0998-307X

Journal of Education and Recreation Patterns (JERP)
Volume 3, Issue 2, Year 2022 ISSN: 2757-9344

Investigating Recreation Activity Type on College Students' Subjective Well-being and Leisure Satisfaction

Danny Twilley[1], W. Hunter Holland[2], Laura Morris[3]

ARTICLE INFORMATION
Original Research Paper

Received 21.11. 2022
Accepted 29.12. 2022

https://jerpatterns.com

December, 2022

Volume: 3, No: 2

Pages: 175-192

ABSTRACT (Times New Roman typeface and 10 points)
Those working in higher education have a vested interest in understanding how outdoor recreation activities facilitate happiness in students, especially with student well-being at an all-time low. The following study compares indoor versus outdoor recreation activities within the context of the DRAMMA model of leisure engagement and subjective well-being, which includes the psychological mechanisms of meaning, mastery, detachment-recovery, autonomy, and affiliation. In addition, the role of leisure satisfaction is considered as part of the model. Findings indicated a significant difference in the subjective well-being score between outdoor and indoor recreation participants and a higher score in leisure satisfaction for outdoor than indoor recreation participants.

Keywords: DRAMMA, Happiness, Leisure Satisfaction, Recreation Activity

INTRODUCTION

The benefits of being happy, operationalized in research as subjective well-being (SWB), are numerous as it fosters sociability, altruism, liking of self and others, strong bodies and immune systems, success, more fulfilling relationships, greater community involvement, higher incomes, and effective conflict resolution skills (DeNeve et al., 2013; Hills & Argyle, 2002; Lyubomirsky et al., 2005; Seligman & Csikszentmihalyi, 2000). SWB refers to how individuals evaluate their own life and consists of high life satisfaction, frequent positive emotions, and few negative feelings (Diener et al., 2018; Newman et al. 2014; Zacher & Rudolph, 2020). Researchers from various disciplines have spent an extensive amount of time trying to understand the foundation of happiness as it is a complex construct with varying definitions (Diener, 1984; Seligman & Csikszentmihalyi, 2000). Lyubomirsky has identified three primary variables that influence happiness: (a) relevant life circumstances, (b) a genetically determined set-point for positive mood and happiness, (c) the extent to which people engage in happiness increasing strategies or behaviors (Lyubomirsky & Layous, 2013; Lyubomirsky et al., 2005).

Recognized as a facilitator of happiness, leisure is a driving factor of SWB (Diener et al., 1999; Holland et al., 2018; Lyubomirsky et al., 2005; Parson et al, 2020). Leisure's influence on happiness is multifaceted as it provides opportunities for affiliation, autonomy, meaning, mastery, and detachment and recovery from stress (DRAMMA) all of which influence leisure and life satisfaction (Kuykendall et al., 2015; Newman et al., 2014). Researchers have emphasized the importance of participant satisfaction in leisure engagements and have identified leisure satisfaction as a key component of both SWB and sustained participation in leisure activities (Diener et al., 1999; Lyubomirsky et al., 2005; Parson et al., 2020; Searle et al., 1993). Recognizing the role leisure engagement plays in the happiness formula is useful, but it is important to understand that not all recreation experiences may equally influence an individual's happiness. For the purposes of this study, we refer to recreation defined by Hurd et al. (2022) as "having fun or enjoying a pastime or diversion" (p. 37). We define leisure play as "any form of play, amusement, etc. used for refreshment of body or mind" (Veal, 1992, p. 2).

Time spent recreating in natural environments is well documented as a strong predictor of happiness and well-being (Arnould & Price, 1993; Capaldi et al., 2014; Hattie et al., 1997; Holland et al., 2018; Holland et al., 2020; Marselle et al., 2014). Those who identify a relationship with nature have been linked to high life satisfaction, self-esteem, and psychological well-being (Houge Mackenzie, 2020). Studies have found a statistically significant positive relationship between nature connectedness and happiness as individuals who are more connected to nature are likely to be happier (Capaldi, 2014), and tend to be flourishing and functioning well psychologically (Pritchard et al., 2020). While research associating beneficial SWB outcomes with recreation experiences has been abundant (Hattie et al., 1997; Holland et al., 2018), there is a gap in the literature exploring the unique influence of indoor versus outdoor recreation experiences on participants' SWB.

College student well-being is at an all-time low, with approximately 30% of students reporting mental health problems (Akeman et al., 2019; Lattie et al., 2019; Oswalt et al., 2018) with anxiety and depression identified as the most common disorders (Conley et al., 2015; Lattie et al., 2019). These trends are concerning as students suffering from mental health challenges report negative impacts to their daily functioning, physical health and well-being, academic success and quality of life (Akeman et al., 2019; Conley et al., 2015). As a result, university administrators are exploring strategies to promote and enhance student well-being

(Travia et al., 2022). One approach to enhance student well-being is through increased and diverse leisure opportunities (Diener et al., 1999; Lyubomirsky et al., 2005; Parson et al., 2020).

Studies focusing on college outdoor program experiences have demonstrated positive impacts on students related to adjustment, resilience, social support, and well-being (Andre et al., 2017; Shellman & Hill, 2017). A study of 132 college students who participated in a required two-week outdoor program showed significant gains in resilience and mental health (Shellman & Hill, 2017). Illagan et al. (2020) found that happiness improved for female military cadets after a three-day wilderness backpacking trip. Using pre/post-tests, the study systematically measured female cadets' increases in self-reported happiness on the Oxford Happiness Questionnaire. Qualitative data were also collected post trip to provide additional insight to happiness gains. Increases in happiness for the group were related to: relaxation, adventure, social bonding, nature, and self-reflection. These studies support the usefulness of outdoor recreation programs as a potential medium to cultivate positive mental health and subjective well-being. However, not all leisure engagements are the same and further research is needed to identify the unique influence of varying recreation types on participants' SWB.

This study is grounded on the theoretical DRAMMA model developed by Newman et al. (2014) which assesses the connection between leisure and SWB, through leisure satisfaction, via five psychological pathways (detachment-recovery, affiliation, meaning, mastery, and autonomy). Newman et al. (2014) theorized that the satisfaction of the psychological needs related to the DRAMMA model during leisure time is conducive to improved subjective well-being. Detachment-recovery refers to the degree to which an individual is able to mentally disengage from work during leisure time. Autonomy is defined as the degree to which an individual freely chooses to participate in a leisure activity. Mastery refers to the degree to which a leisure activity challenges and provides learning opportunities. Meaning indicates the process where individuals gain something important or valuable in life through leisure. The last psychological mechanism of the DRAMMA model is affiliation which is the ability of an individual to socially connect with others through leisure experiences.

To date, there has been no study using the DRAMMA model of leisure and SWB to compare indoor and outdoor recreation participation. Therefore, this study aims to understand the relationship between college students' participation in indoor recreation activities and outdoor recreation activities as it contributes to individual SWB. To do this, the following research questions were investigated:

Q1: Is there a difference in SWB between indoor and outdoor recreation?

Q2: Is there a difference in Leisure Satisfaction between indoor and outdoor recreation?

Q3: Do the 5 psychological mechanisms of the DRAMMA model predict SWB in indoor and outdoor recreation participants?

Q4: Do the 5 psychological mechanisms of the DRAMMA model predict leisure satisfaction in indoor and outdoor recreation participants?

Q5: How well does the DRAMMA model explain SWB in a college student population who engage in indoor recreation and outdoor recreation activities?

METHOD

Sampling

Using a convenience sampling procedure, during the 2015-16 academic year, we sent 16,816 undergraduate students at a large, public mid-western university a link to an anonymous electronic-version survey constructed via Qualtrics survey software, requesting their participation. Undergraduate college students are a logical population to study the relationship between leisure participation and happiness as they tend to rank leisure engagements as important in their lives (Blais et al., 1990; Wu, 2009) and is second only to sleep in how students spend their time (Mortenson, 2011). Follow-up emails were sent two and four weeks following the initial contact. This study was approved by the Institutional Review Board of Ohio University in (2015).

Instrument Development

A pilot study was conducted to evaluate the reliability and validity of the survey instrument as it was developed by combining already established instruments or subscales into a single assessment tool. The instrument for the study was divided into four sections: Section A- demographic and leisure participation information (13 items); Section B- psychological outcomes of leisure participation (42 items); Section C- leisure satisfaction (24 items); and Section D- subjective well-being (5 items). Pre-validated scales were used for Sections B through D: Recovery Experience Questionnaire (REQ) (Sonnentag & Fritz, 2007); Basic Psychological Needs Scale (BPNS) (Ilardi et al., 1993); Engagement in Meaningful Activities Survey (EMAS) (Goldberg et al., 2002); Leisure Satisfaction Scale (LSS) (Beard & Ragheb, 1980); Subjective Happiness Scale (SHS) (Lyubomirsky & Lepper, 1999).

Analysis

Recreation activities were grouped as (a) indoor recreation (e.g., working out, basketball, indoor cardio) or (b) outdoor recreation (e.g., rock-climbing, nature hiking, mountain biking). Two researchers reviewed recreational activities provided individually in order to establish clear guidance in grouping. Next, each researcher compared groupings in order to identify areas of variation until consensus was reached. In qualitative analysis, two or more researchers commonly perform an independent analysis of the data similar to what was used in this study to increase the validity of the results (Creswell & Creswell, 2017; Holland et al., 2018). To compare the differences between student groups (indoor vs. outdoor recreation) through the DRAMMA model, t-tests were utilized to compare indoor and outdoor recreation choices with SWB, then again for leisure satisfaction. MANOVA tests were performed to analyze the psychological mechanisms of the DRAMMA model, the differences between indoor and outdoor recreation choices, and SWB, then again for leisure satisfaction. In order to further understand the relationship between DRAMMA indicators, SWB and leisure satisfaction in both indoor and outdoor recreation participation, path analysis models were created and tested. These models replicated the path model tested by Twilley (2017) which is based on the theoretical path model proposed by Newman et al. (2014). The theoretical path models show the 5 mechanisms of the DRAMMA model as exogenous variables, leisure satisfaction as an endogenous variable to SWB.

FINDINGS

Following data cleaning and removal of outliers, our final sample included 704 surveys. Our sample included freshmen (27.8%), sophomores (22.7%), juniors (23.4%), and seniors (26.1%). Female respondents represented 64% of our sample. Participants ranged in age from 18 (12.1%) to >22 (10.5%) with 19 years old (24.9%) comprising the largest age group (Appendix 1).

Reliability estimates for all 5 DRAMMA subscales were at or above the acceptable range (Citation): Detachment-Recovery, α = .791; Autonomy, α = .678; Mastery, α = .633; Meaning, α = .864; Affiliation, α = .834. The reliability testing results for the leisure satisfaction and the SWB measure were: Leisure Satisfaction Scale, a = .886; Subjective Happiness Scale, a = .861. When evaluating Cronbach's Alpha greater than 0.90 is excellent, above 0.80 is good, above 0.70 is acceptable, while above 0.60 is questionable but when dealing with psychological constructs values below 0.70 can be expected (Field, 2009).

Q1: Is There a Difference in Subjective Well-being Between Indoor and Outdoor Recreation Participants?

Outdoor recreation participants demonstrated a 0.27 (95% CI, -0.52 to -0.025) greater score in SWB than the indoor recreationalists, as depicted in (Table 1). An independent t-test indicated a significant difference in the SWB score between outdoor and indoor recreation participants (p=0.03). A relatively small effect size was observed between the population means (0.23).

Table 1. Independent T-Test Results for SWB Score Between Indoor and Outdoor Recreation Participants

Recreation	*n*	Mean	SD	SWB Score	*t*	*p*	Cohen's d
Indoor	591	4.89	1.23		-2.165	0.03	0.23
Outdoor	113	5.17	1.22	+0.27			

Q2: Is There a Difference in Leisure Satisfaction Between Indoor and Outdoor Recreation Participants?

An independent samples t-test recorded a 0.4 (95% CI, -0.48 to -0.32) higher result in Leisure Satisfaction for outdoor recreation than indoor recreation and revealed a significant difference in the Leisure Satisfaction score between the population means (p=0.001). A large effect size was observed between the outdoor and indoor recreation groups (0.85) (Table 2).

Table 2. Independent Samples T-Test Results for Leisure Satisfaction (LS) Score Between Indoor and Outdoor Recreation Participants

Recreation	*n*	Mean	SD	LS Score	*t*	*p*	Cohen's d
Indoor	590	3.91	0.55		-9.5	0.001	0.85

Q3: Do the 5 Psychological Mechanisms of the DRAMMA Model Predict SWB in Indoor and Outdoor Leisure Participants?

Pearson Correlation Analysis

A Pearson correlation coefficient analysis was conducted among each of the 5 DRAMMA mechanisms and SWB (Table 3). Coefficients between .10 and .29 represent a small relationship, coefficients between .30 and .49 represent a moderate relationship, and coefficients above .50 indicate a large relationship (Field, 2009). Autonomy held a significant positive correlation with Mastery ($r = 0.44$, $p < .001$), Affiliation ($r = 0.37$, $p < .001$), Meaning ($r = 0.29$, $p < .001$), Detachment-Recovery ($r = 0.29$, $p < .001$), Leisure Satisfaction ($r = 0.20$, $p < .001$), and SWB ($r = 0.18$, $p < .001$). Mastery held a significant positive correlation with Meaning ($r = 0.61$, $p < .001$), Leisure Satisfaction ($r = 0.50$, $p < .001$), Affiliation ($r = 0.35$, $p < .001$), Detachment-Recovery ($r = 0.17$, $p < .001$) and SWB ($r = 0.26$, $p < .001$). Affiliation held a significant positive correlation with Meaning ($r = 0.21$, $p < .001$), Detachment-Recovery ($r = 0.12$, $p = .002$), SWB ($r = 0.27$, $p < .001$) and Leisure Satisfaction ($r = 0.44$, $p < .001$). Meaning held a significant positive correlation with Detachment-Recovery ($r = 0.24$, $p < .001$), SWB ($r = 0.26$, $p < .001$) and Leisure Satisfaction ($r = 0.69$, $p < .001$) indicating a large relationship. Detachment-Recovery held a significant positive correlation with Leisure Satisfaction ($r = 0.18$, $p < .001$) and SWB ($r = 0.12$, $p < .001$). Leisure Satisfaction held a significant positive correlation with SWB ($r = 0.31$, $p < .001$).

Table 3. Pearson Correlation Matrix among Variables

Variable	1	2	3	4	5	6	7
1. Autonomy	-						
2. Mastery	0.44*	-					
3. Affiliation	0.37*	0.35*	-				
4. Meaning	0.29*	0.61*	0.21*	-			
5.Detachment-Recovery	0.29*	0.17*	0.12*	0.24*	-		
6. Leisure Satisfaction	0.20*	0.50*	0.44*	0.69*	0.18*	-	
7. SWB	0.18*	0.26*	0.27*	0.26*	0.12*	0.31*	-

** Indicates a statistically significantly relationship of* ***p < .001***

Multiple regressions were used to determine if the five psychology mechanisms of the DRAMMA model predict SWB in indoor and outdoor recreation participants. The model was found not to be a strong predictor of SWB in either indoor participations [explaining 6.5% of the variance ($df = .5$; $F = 9.18$; $p < .001$)] or outdoor recreation participants [explaining 7.2% of the variance ($F = 2.74$; $p < .05$)]. Regarding indoor recreation participants, two of the five mechanisms were identified as significant predictors of SWB including affiliation ($p < .001$) and meaning ($p < .001$). For outdoor recreation participants, only one mechanism was identified as a significant predictor of SWB [meaning ($p < .05$)] (Table 4).

Table 4. Multiple Regression with the Psychological Mechanisms Predicting SWB

Variable	*Indoor Recreation*					*Outdoor Recreation*				
	B	***SE***	***β***	***t***	**p**	***B***	***SE***	***β***	***t***	**p**
Detachment/Recovery	.072	.027	.083	1.06	.208	.052	.041	.033	1.40	.331
Affiliation	.056	.052	.043	.522	<.001	.076	.012	.103	.331	1.12
Mastery	-.131	.059	-.151	-1.113	.122	.003	.060	-.172	.023	.056
Meaning	.372	.102	.285	3.08	<.001	.412	.087	.238	2.83	.005
Autonomy	-.003	.055	-.010	-.046	.754	-.011	.101	-.002	-.101	.814

Indoor Recreation R Square = .065; Outdoor Recreation R Square =.072

R squared is a goodness of fit measure that informs researchers how well the regression model explains observed data (Hayes, 2021). The higher the R square, the better a model explains all the variation in the response variable around its mean. The R^2 for indoor recreation was 65% and the R^2 for outdoor recreation was 72% indicating the regression model did a good job explaining the observed data.

Q4: Do the 5 psychological Mechanisms of the DRAMMA Model Predict Leisure Satisfaction in Indoor and Outdoor Leisure Participants?

Multiple regressions were used to determine if the five psychology mechanisms of the DRAMMA model predict leisure satisfaction in indoor and outdoor recreation participants. The model was found to predict leisure satisfaction in indoor [explaining 60.7% of the variation ($F = 29.74$; $p < .001$)] and outdoor recreation participants [explaining 56.2% of the variation ($F = 29.74$; $p < .001$)]. Regarding indoor recreation participants, four of the five mechanisms were identified as significant predictors of leisure satisfaction including meaning ($p < .001$), affiliation ($p < .001$), mastery ($p < .002$) and autonomy ($p < .001$). For outdoor recreation participants, three of the five mechanisms were identified as significant predictors of leisure satisfaction including meaning ($p < .001$), affiliation ($p < .001$) and detachment-recovery ($p < .05$) (Table 5).

Table 5. Multiple Regression with the Psychological Mechanisms Predicting Leisure Satisfaction

Variable	*Indoor Recreation*					*Outdoor Recreation*				
	B	***SE***	***β***	***t***	**p**	***B***	***SE***	***β***	***t***	**p**
Detachment/Recovery	.166	.013	.023	1.56	.361	1.02	.040	.160	1.43	<.05
Affiliation	.075	.053	.140	.122	<.001	.132	.002	.112	.521	<.001
Mastery	-.032	.115	-.022	-.103	<.002	.001	.062	-1.12	.043	.126
Meaning	.312	.105	.142	2.28	<.001	.368	1.21	.418	1.63	<.001
Autonomy	-.017	.077	-.009	-.191	<.001	-.155	.101	-.012	-.001	1.014

Indoor Recreation R Square = .061; Outdoor Recreation R Square =.056

Q5: How Well Does the DRAMMA Model Explain SWB in a College Student Population Who Engage in Indoor Recreation?

To answer research questions 5 and 6, we replicated the path model tested by Twilley (2017) which is based on the theoretical path model proposed by Newman et al. (2014). The theoretical path models show the 5 mechanisms of the DRAMMA model as exogenous variables, leisure satisfaction as an endogenous variable to SWB.

Indoor Recreation

Figure 1 / Table 6 shows the standardized estimates for the Path Diagram of the DRAMMA model for indoor recreation participants when accounting for leisure satisfaction, which is the basis for testing the overall model fit. Insignificant paths were included in the model based on relevance in the theoretical model (Hancock et al., 2010). Two different fit indices are reported for each model with the first being the Normed Fit Index (NFI) that assumes that all measured variables are uncorrelated with values closer to 1 indicating a very good fit and a value above .9 being a good fit. The NFI was .981 for the theoretical model. The second index is the Comparative Fit Index (CFI), which is a revised version of the NFI as it takes into account sample size. The CFI was .985, with anything above .9 being a good fit, with above .95 being an excellent fit. The RMSEA was 0.08.

Figure 1. Theoretical Path Model: Indoor Recreation

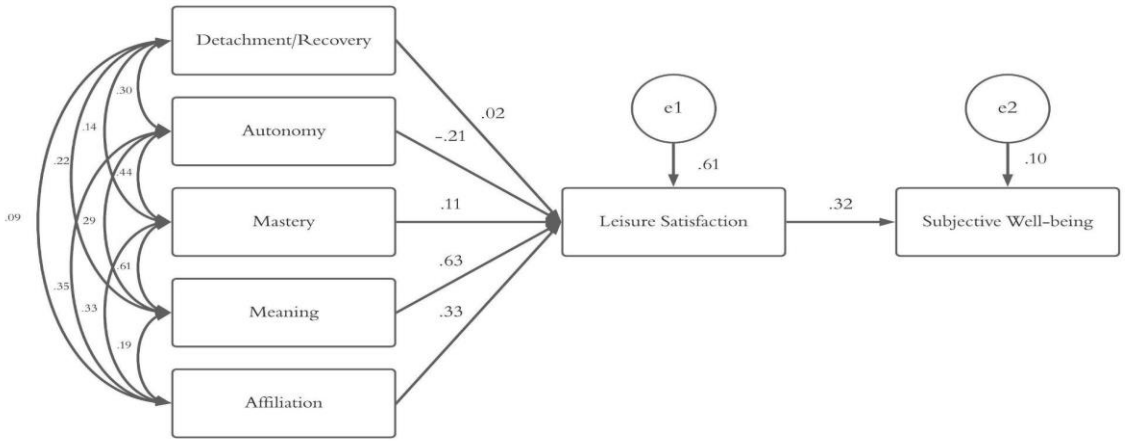

Table 6. Theoretical Path Model Fit: Indoor Recreation

Model	SRMR	RMSEA	CI LO 90	CI HI 90	NFI	CFI
Default model	.07	.078	.047	.112	.981	.985
Saturate model	-	-	-	-	1.00	1.00
Independence model	-	.31	.30	.33	.000	.000

After modifying the model to account for affiliation's influence on SWB, the NFI was .993, the CFI was 0.996, and the RMSEA was 0.04, both indicating excellent fit [Figure 2 / Table 7 (Hancock, Stapelton & Muller, 2010)].

Figure 2. *Modified Path Model: Indoor Recreation*

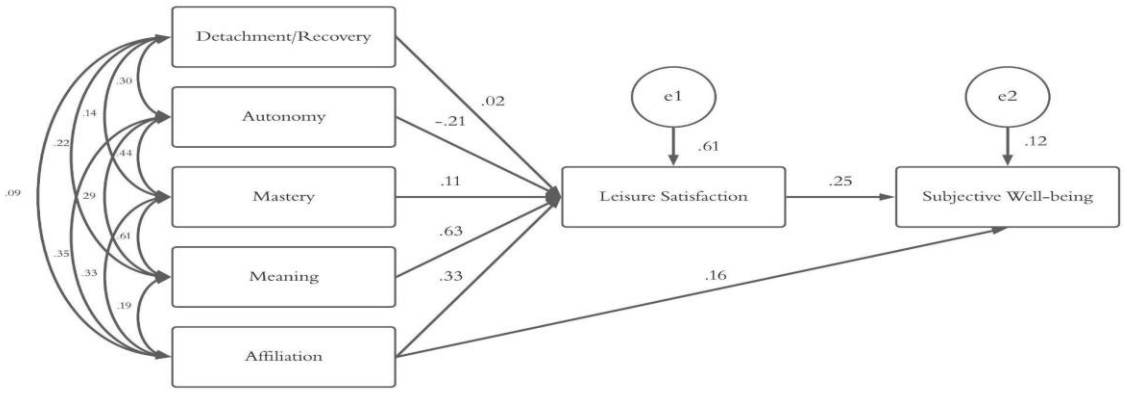

Table 7. Modified Path Model Fit: Indoor Recreation

Model	SRMR	RMSEA	CI LO 90	CI HI 90	NFI	CFI
Affiliation to SWB	.026	.042	.001	.084	.993	.996

Q6: How Well Does the DRAMMA Model Explain SWB in a College Student Population Who Engage in Outdoor Recreation?

Figure 3 / Table 8 shows the standardized estimates for the Path Diagram of the DRAMMA model for outdoor recreation participants when accounting for leisure satisfaction, which is the basis for testing the overall model fit. Insignificant paths were included in the model based on relevance in the theoretical model (Hancock et al., 2010). The NFI was .917, CFI was 0.931, and the RMSEA was 0.16.

Figure 3. Theoretical Path Model: Outdoor Recreation

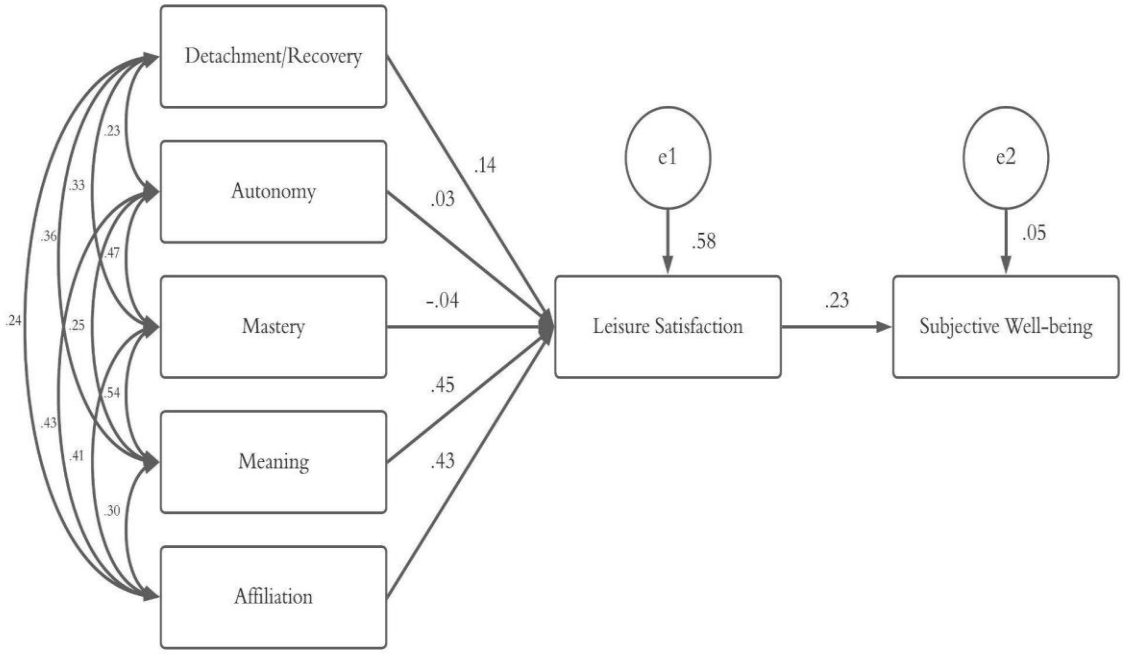

Table 8. Theoretical Path Model Fit: Outdoor Recreation

Model	SRMR	RMSEA	CI LO 90	CI HI 90	NFI	CFI
Default model	.12	.16	.09	.24	.917	.931
Saturate model	-	-	-	-	1.00	1.00
Independence model	-	.31	.27	.34	.000	.000

After modifying the model to account for affiliation's influence on SWB, the NFI was .983, the CFI was 0.999, and the RMSEA was 0.02, both indicating excellent fit [Figure 4 / Table 9 (Hancock et al., 2010)].

Figure 4. Modified Path Model: Outdoor Recreation

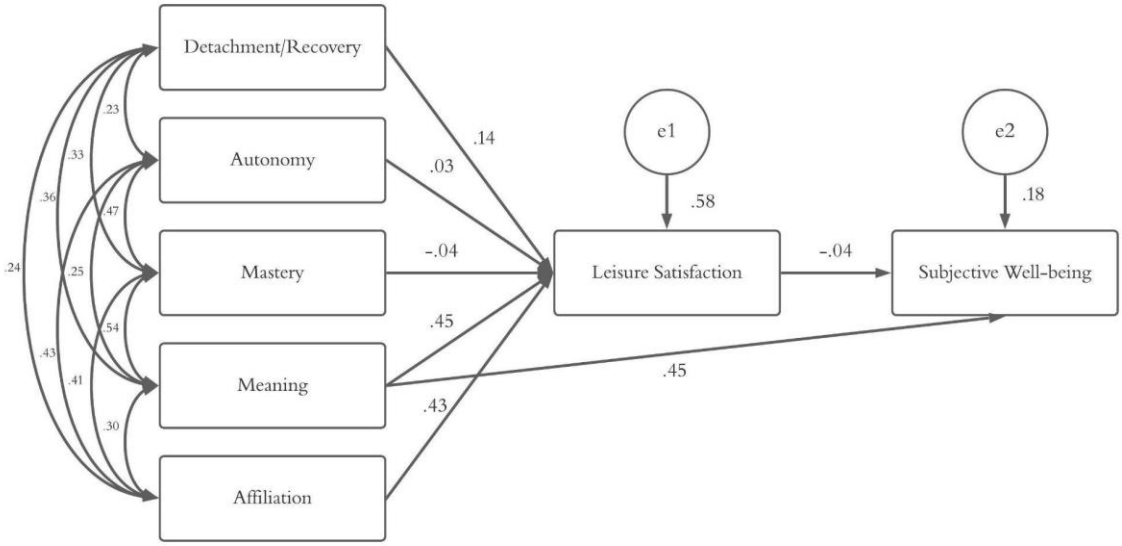

Table 9. Modified Path Model Fit: Outdoor Recreation

Model	SRMR	RMSEA	CI LO 90	CI HI 90	NFI	CFI
Meaning to SWB	.018	.022	.001	.146	.983	.999

The RMSEA, is essentially the error term for the model, indicates how well the model with optimally chosen parameter estimates would fit the population's covariance matrix and is considered one of the most informative fit indices. The RMSEA and its associated 90% confidence interval should fall below .05 to be considered excellent and .08 to be acceptable (Hooper et al., 2008). The RMSEA for the theoretical model was .02. 4 degrees of freedom, Chi Squared= 27.607, p = < .001, which is likely a result of a large sample size (Hooper et al., 2008).

DISCUSSION

This study attempts to understand the role of leisure engagements, in particular indoor versus outdoor leisure, in predicting college students' leisure satisfaction and SWB. We found that college students who participated in outdoor recreation indicated higher SWB and leisure satisfaction than indoor recreation participants. These findings support previous literature associating participation in outdoor recreation activities with a range of beneficial individual and group-development mental health outcomes (e.g., decreased stress, increased happiness, mental rejuvenation, prosocial behaviors, elevated mindfulness) (Hattie et al., 1997; Holland et al., 2018; Houge & Brymer, 2020; Pretty & Barton, 2020; Thomsen et al., 2018). In the context of an educational setting, student participation in outdoor recreation has been associated with both personal (e.g., increased self-confidence, advancement of hard and soft skills, self-awareness) and academic-development outcomes (e.g., increased acceptance of challenge, participation in reflective practices, increased confidence in one's ability to succeed) (Holland et al., 2020).

Research investigating the influence of specific outdoor recreation elements is limited. However, of the few studies that have investigated this question (e.g., Furman & Sibthorp, 2011; Goldenberg & Soule, 2015; Holland et al., 2018; Holland et al., 2020) three key elements are commonly identified as influential towards participant outcomes. These elements include exposure to the natural environment [i.e., novelty (e.g., Daniel et al., 2010)], engagement in experiential forms of learning (e.g., Gassner & Russell, 2008), and unique social interactions [i.e., team-based activities (e.g., Bell & Holmes, 2011]. Though not in the scope of this study, these influential elements of outdoor recreation activities may have contributed to the increased SWB and leisure satisfaction in our sample. Further research should aim to investigate the unique influential elements associated with increased SWB and leisure satisfaction in college students participating in outdoor recreation.

Newman et al.'s (2014) DRAMMA model was found not to predict SWB differences in college students participating in indoor vs. outdoor recreation. However, DRAMMA mechanism meaning was associated with increased SWB for both groups. Meaning refers to the process where individuals gain something important or valuable in life through leisure (Iwasaki, 2008; Newman et al., 2014). Leisure is a catalyst for developing meaning as it facilitates positive emotions, positive self-identity, social connections, and opportunities for learning (Bailey & Fernando, 2012; Iwaski, 2007). In fact, many professional recreation agencies integrate experiential learning methods aimed at assisting participants in identifying generalizations that can be transferred from the initial recreation experience into diverse contexts of their personal and professional lives (Holland et al., 2018). The strong relationship between meaning found through leisure participation and SWB in this study is supported by previous research (Iwasaki, 2007; Wang & Wong, 2011).

Another component to testing the DRAMMA model was to understand if the five psychological mechanisms predict leisure satisfaction. As established in the literature review, the five psychological mechanisms are connected to leisure satisfaction. For indoor recreation participants, four of the five mechanisms were identified as significant predictors of leisure satisfaction including meaning, affiliation, mastery, and autonomy. For outdoor recreation participants, three of the five mechanisms were identified as significant including meaning, affiliation, and detachment-recovery. The first two (meaning and affiliation) explain that high measurements of leisure satisfaction are dependent upon participant success developing a sense of meaning through leisure experiences. Our findings indicate that students gained personal meaning through their leisure experiences thus increasing their leisure satisfaction. Identity development is recognized as a key process of college student flourishment (Evans et al., 2009) and leisure experiences are commonly associated with both advancements in identity development and increased happiness (Holland et al., 2018; Wang & Wong, 2011). Our findings support existing literature investigating the connections between identity development and leisure experiences, and provide further insight into the influence of meaningful leisure engagements for college students (Evans et al., 2009). Our findings that mastery and autonomy were not identified as significant are supported in existing literature as individual and relaxation-oriented activities tend to be familiar and routine, allowing individuals to escape the stress of novelty. Additionally, people expect to experience relaxation from activities that are not challenging and do not require advancements in their invested skill (Tinsley & Eldredge, 1995).

Affiliation and a sense of belonging are also important to leisure satisfaction and SWB. Campus recreation can contribute to a sense of community and belonging for students (Elkins et al., 2011). More specifically, outdoor programs have been shown to foster social support and the establishment of relationships (Andre et al., 2017; Illagan et al., 2020). Therefore, when

meaningful engagements provide students the ability to form and advance social connections (affiliation), leisure experiences becomes powerful predictors of leisure satisfaction.

Interestingly detachment-recovery did not predict leisure satisfaction for indoor recreation participants, which once again is surprising considering the strong association between leisure experiences facilitating detachment-recovery experiences in individuals. Similar to SWB the question of context must be considered as detachment-recovery was developed within the framework of leisure creating opportunities for recovery experiences from work and not school. Indoor recreation participants in this study did not feel the need for detachment-recovery in order to experience leisure satisfaction. The findings are not saying detachment-recovery is not an important component of leisure satisfaction but when considered with the four other psychological mechanisms detachment-recovery does not predict leisure satisfaction in the study's sample. It would be interesting in future research to consider how stress level and time spent on leisure activities influences one's leisure satisfaction.

CONCLUSION

Collegiate recreation professionals should champion the role outdoor recreation and leisure can play in student happiness and well-being. Considering the findings and literature on outdoor recreation and nature sports, promoting these programs and opportunities may foster and enhance psychological resilience, positive mental health and well-being at a time when many students are struggling (Shellman & Hill, 2017). Recreation professionals can intentionally cultivate well-being on campus through the provision of intentional and focused outdoor recreation programs, which can make a positive and lasting contribution to the well-being of students.

Limitations

This study intended to gain a deeper understanding of the role of leisure activities, in particular indoor versus outdoor leisure, in predicting leisure satisfaction and an individuals' SWB. The limitations of the study include:

1. The study sampled only undergraduate college students at one large Midwestern University.

2. The research involved self-reported data that has potential issues of honesty, introspective ability, memory recall, and comprehension.

3. Researchers have over-surveyed college students in past years, resulting in survey fatigue, which can impact response rate along with how accurately and sincerely respondents answer questions. However, because there are no incentives for participating the respondents who do fill out the survey were likely intrinsically motivated.

As a result, generalizations of these findings should be made with caution.

REFERENCES

Akeman, E., Kirlic, N., Clausen, A., Cosgrove, K, McDermott, T., Cromer, L., Paulus, M., Yeh, H., & Aupperle, R. (2019). A pragmatic clinical trial examining the impact of a resilience program on college student mental health. *Depression & Anxiety, 37*: 202-213. https://doi.org/10.10002/da.22969

Andre, E.K., Williams, N., Schwartz, F., Bullard, C. (2017). Benefits of campus outdoor recreation programs: A review of the literature. *Journal of Outdoor Recreation, Education, and Leadership, 9*(1), 15-25. https://doi.org/10.18666/JOREL-2017-V9-I1-7491

Arnould, E. J., & Price, L. L. (1993). River magic: Extraordinary experience and the extended service encounter. *Journal of Consumer Research, 20*(1), 24–45. https://doi.org/10.1086/209331

Bailey, A. W., & Fernando, I. K. (2012). Routine and project-based leisure, happiness, and meaning in life. *Journal of Leisure Research, 44*(2), 139–154. https://doi.org/10.1080/00222216.2012.11950259

Bell, B. J., & Holmes, M. R. (2011). Important factors leading to outdoor orientation program outcomes: A qualitative exploration of survey results. *Journal of Outdoor Recreation, Education, and Leadership, 3*(1), 26–39. https://doi.org/10.7768/1948-5123.1075

Capaldi, C. A., Dopko, R. L., & Zelenski, J. M. (2014). The relationship between nature connectedness and happiness: A meta-analysis. *Frontiers in Psychology, 1–15*. https://doi.org/10.3389/fpsyg.2014.00976

Conley, C. S., Durlak, J. A., & Kirsch, A. C. (2015). A meta-analysis of universal mental health prevention programs for higher education students. *Prevention Science* (2015) https://doi.org/10.1007/s11121-015-0543-1

Creswell, J. W., & Creswell, J. D. (2017). *Research design: Qualitative, quantitative, and mixed methods approaches*. Sage publications.

Daniel, B., Bobilya, A. J., Kalisch, K. R., & Lindley, B. (2010). Lessons from the outward bound solo: Intended transfer of learning. *Journal of Outdoor Recreation, Education and Leadership, 2*(1), 37-59. https://doi.org/10.7768/1948-5123.1032

Diener, E., Diener, C., Choi, H., & Oishi, S. (2018). Revisiting "Most People Are Happy"- and discovering when they are not. *Perspectives on Psychological Science, 13*(2), 166-170. https://doi.org/10.1177/1745691618765111

Diener, E., Suh, E. M., Lucas, R. E., & Smith, H. (1999). Subjective well-being: Three decades of progress. *Psychological Bulletin, 125*(2), 276–302. http://doi.org/10.1037/0033-2909.125.2.276

Elkins, D. J., Forrester, S. A., & Noël-Elkins, A. V. (2011). The Contribution of Campus Recreational Sports Participation to Perceived Sense of Campus Community. *Recreational Sports Journal, 35*(1), 24–34. https://doi.org/10.1123/rsj.35.1.24

Evans, N. J., Forney, D. S., Guido, F. M., Patton, L. D., & Renn, K. A. (2009). *Student development in college: Theory, research, and practice*. John Wiley & Sons.

Field, A. (2009). *Discovering statistics using SPSS* (3rd ed.). Sage.

Furman, N., & Sibthorp, J. (2011). The transfer of expedition behavior skills from the National Outdoor Leadership School to life post-course. *Journal of Outdoor Recreation, Education and Leadership, 3*(2), 87-91. https://doi.org/10.7768/1948-5123.1103

Gassner, M. E., & Russell, K. C. (2008). Relative impact of course components at Outward Bound Singapore: A retrospective study of long-term outcomes. *Journal of Adventure Education & Outdoor Learning, 8*(2), 133-156. https://doi.org/10.1080/14729670802597345

Goldberg, B., Brintnell, E., & Goldberg, J. (2002). The relationship between engagement in meaningful activities and quality of life in persons disabled by mental illness.

Occupational Therapy in Mental Health, *18*(2), 17–44. https://doi.org/10.1300/J004v18n02_03

Goldenberg, M., & Soule, K. E. (2015). A four-year follow-up of means-end outcomes from outdoor adventure programs. *Journal of Adventure Education and Outdoor Learning*, *15*(4), 284-295. https://doi.org/10.1080/14729679.2014.970343

Hammitt, W. E., Cole, D. N., & Monz, C. A. (2015). *Wildland recreation: Ecology and management*. John Wiley and Sons.

Hattie, J., Marsh, H. W., Neill, J. T., & Richards, G. E. (1997). Adventure education and Outward Bound: Out-of-class experiences that make a lasting difference. *Review Of educational research*, *67*(1), 43-87. https://doi.org/10.3102%2F00346543067001043

Hayes, T. (2021). R-squared change in structural equation models with latent variables and missing data. *Behavior Research Methods*, *53*(5), 2127-2157. https://doi.org/10.3758/s13428-020-01532-y

Holland, W. H., Powell, R. B., & Holland, K. K. (2020). Wilderness-based professional development for educators: Exploring outcomes and influential programmatic elements. *Journal of Outdoor Recreation, Education, and Leadership*, *12*(4), 380-396. https://doi.org/10.18666/JOREL-2020-V12-I4-10271

Holland, W. H., Powell, R. B., Thomsen, J. M., & Monz, C. A. (2018). A systematic review of the psychological, social, and educational outcomes associated with participation in wildland recreational activities. *Journal of Outdoor Recreation, Education, and Leadership*, *10*(3), 197-223. https://doi.org/10.18666/JOREL-2018-V10-I3-8382

Hooper, D., Coughlan, J., & Mullen, M. R. (2008). Structural equation modelling: Guidelines for determining model fit. *Electronic Journal of Business Research Methods*, *6*(1), 53-60.

Houge Mackenzie, S. & Brymer, E. (2020). Conceptualizing adventurous nature sport: A positive psychology perspective. *Annals of Leisure Research*, 23(1), 79-91. https://doi.org/10.1080/11745398.2018.1483733

Hurd, A., Anderson, D. M., & Mainieri, T. (2021). *Kraus' recreation and leisure in modern society*. Jones & Bartlett Learning.

Ilardi, B., Leone, D., Kasser, T., & Ryan, R. (1993). Employee and supervisor ratings of motivation: Main effects and discrepancies associated with job satisfaction and adjustment in a factory setting. *Journal of Applied Social Psychology*, *23*(21), 1789–1805. https://doi.org/10.1111/j.1559-1816.1993.tb01066.x

Illagan, G., Illagan, J., Jocius, R., Jefferson, R., Bennett-Mintz, J., McCormick, K., & Farrell, M. (2020). Happiness outcomes among cadet women backpackers. *The Journal of Adventure Education and Outdoor Learning*, *20*(4), 285-297. https://doi.org/10.1080/14729679.2019.1660194

Iwasaki, Y. (2007). Leisure and quality of life in an international and multicultural context: What are major pathways linking leisure to quality of life? *Social Indicators Research*, *82*(2), 233–264. https://doi.org/10.1007/s11205-006-9032-z

Iwasaki, Y. (2008). Pathways to meaning-making through leisure-like pursuits in global contexts. *Journal of Leisure Research*, *40*(2), 231–249. https://doi.org/10.1080/00222216.2008.11950139

Kuykendall, L., Tay, L., & Ng, V. (2015). Leisure engagement and subjective well-being: A meta-analysis. *Psychological Bulletin*, *141*(2), 364–403. http://doi.org/10.1037/a0038508

Lattie, E.G., Adkins, E. C., Winquist, N., Stiles-Shields, C., Wafford, Q. E., Graham, A. K. (2019). Digital mental health interventions for depression, anxiety, and enhancement of psychological well-being among college students: Systematic Review. *Journal of Medical Internet Research*, *21*(7), e12869. DOI: 10.2196/12869

Lyubomirsky, S., King, L., & Diener, E. (2005). The benefits of frequent positive affect: Does happiness lead to success? *Psychological Bulletin*, *131*(6), 803–855. https://psycnet.apa.org/doi/10.1037/0033-2909.131.6.803

Lyubomirsky, S. & Layous, K. (2013). How Do Simple Positive Activities Increase Well-Being? *Current Directions in Psychological Science*, *22*(1), 57-62. https://doi.org/10.1177/0963721412469809

Lyubomirsky, S., & Lepper, H. (1999). A measure of subjective happiness: Preliminary reliability and construct validation. *Social Indicators Research*, *46*(2), 137–155. https://doi.org/10.1023/A:1006824100041

Lyubomirsky, S., Sheldon, K., & Schkade, D. (2005). Pursuing happiness: The architecture of sustainable change. *Review of General Psychology*, *9*(2), 111–131. https://doi.org/10.1037/1089-2680.9.2.111

Marselle, M. R., Irvine, K. N., & Warber, S. L. (2014). Examining group walks in nature and multiple aspects of well-being: A large-scale study. *Ecopsychology*, *6*(3), 134–147. https://doi.org/10.1089/eco.2014.0027

Newman, D., Tay, L., & Diener, E. (2014). Leisure and subjective well-being: A Model of psychological mechanisms as mediating factors. *Journal of Happiness Studies*, *15*(3), 555–578. https://doi.org/10.1007/s10902-013-9435-x

Parsons, H., Houge Mackenzie, S., Filep, S., & Brymer, E. (2020). Subjective well-being and leisure. *Good Health and Well-being*. https://doi.org/10.1007/978-3-319-69627-0_8-1

Pretty, J. & Barton, J. (2020). Nature-based interventions and mind-body interventions: Saving public health costs whilst increasing life satisfaction and happiness. *International Journal of Environmental Research and Public Health*, *17*(7769). https://doi.org/10.3390/ijerph17217769

Pritchard, A., Richardson, M., Sheffield, D., & McEwan, K. (2020). The relationship between nature connectedness and eudaimonic well-being: A meta-analysis. *Journal of Happiness Studies, 21*:1145-1167. https://doi.org/10.1007/s10902-019-00118-6

Searle, M. S., Mactavish, J. B., & Brayley, R. E. (1993). Integrating ceasing participation with other aspects of leisure behavior: A replication and extension. *Journal of Leisure Research*, *25*(4), 389–404. https://doi.org/10.1080/00222216.1993.11969936

Shellman, A., & Hill, E. (2017). Flourishing through resilience: The impact of a college outdoor education program. *Journal of Park and Recreation Administration*, 35(4), 59-68. https://doi.org/10.18666/JPRA-2017-V35-I4-7779

Sonnentag, S., & Fritz, C. (2007). The recovery experience questionnaire: Development and validation of a measure for assessing recuperation and unwinding from work. *Journal of Occupational Health Psychology*, *12*(3), 204–221. https://psycnet.apa.org/doi/10.1037/1076-8998.12.3.204

Thomsen, J. M., Powell, R. B., & Monz, C. (2018). A systematic review of the physical and mental health benefits of wildland recreation. *Journal of Park & Recreation Administration*, *36*(1). http://doi.org/10.18666/JPRA-2018-V36-I1-8095

Travia, R. M., Larcus, J. G., Andes, S., & Gomes, P. G. (2022) Framing well-being in a college campus setting, *Journal of American College Health, 70*:3, 758-772, DOI: 10.1080/07448481.2020.1763369

Twilley, D. L. (2017). Quantitatively testing the DRAMMA model of leisure and subjective well-being on college students. Unpublished doctoral dissertation, Ohio University, Athens.

Veal, A. J. (1992). Definitions of leisure and recreation. *Australian Journal of Leisure and Recreation*, *2*(4), 44-48.

Wang, M. C., & Wong, M. S. (2011). Leisure and happiness in the United States: evidence from survey data. *Applied Economics Letters*, *18*(18), 1813–1816. https://doi.org/10.1080/13504851.2011.564123

Zacher, H., & Rudolph, C. W. (2020). Individual differences and changes in subjective well-being during the early stages of the COVID-19 pandemic. *American Psychologist*. http://dx.doi.org/10.1037/amp0000702