

Accepted Manuscript

To appear in: *Leisure Studies*

Depression and Leisure-Based Meaning-Making: Anhedonia as a Mediating Factor

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## **Depression and Leisure-Based Meaning-Making: Anhedonia as a Mediating Factor**

### **Abstract**

Leisure experience has particularly positive impacts on people's health and well-being when it is perceived as meaningful. Research also suggests that mental health conditions, such as depression, inhibit people from deriving meaningfulness from their leisure. However, it remains underexplored what in depression has this negative effect on leisure-based meaning-making. Anhedonia, one of the depression's key symptoms that undermines one's ability to experience enjoyment, may be an underlying mechanism. This is consistent with recent evidence that positive affect plays a significant role in experiencing meaning in life. The current study examined the relationship between depression, anhedonia, and leisure-based meaning-making. A total of 155 community-living individuals with depression participated in a cross-sectional online survey. Pearson's correlation analysis suggested that leisure-based meaning-making was negatively associated with both depression and anhedonia. However, the following mediation analyses found that the relationship between depression and leisure-based meaning-making was fully mediated by anhedonia, making depression's direct effect non-significant. Similar patterns were observed in sub-dimensions of leisure-based meaning-making: connection/belonging and identity. The findings suggest that the hedonic factor plays a role in leisure-based meaning making.

### **Keywords**

Leisure; Meaning-Making; Enjoyment; Anhedonia; Depression; Mental Health

## **Depression and Leisure-Based Meaning-Making: Anhedonia as a Mediating Factor**

### **Introduction**

Leisure is identified as a key life domain for health and well-being (Caldwell, 2005; Kuykendall et al., 2015; Mannell, 2007). Extensive research has suggested that leisure is particularly conducive to health and well-being when certain leisure experiences become meaningful for individuals by providing, for example, social connections and identity (Iwasaki, 2008; Iwasaki et al., 2018; Newman et al., 2014). Research has explored how people construe leisure experiences as meaningful—or meaning-making—across disenfranchised social groups, including people with mental health issues (Iwasaki et al., 2013; Iwasaki et al., 2015). These studies showed that leisure experiences can be meaningful for individuals with mental health conditions and reap various benefits to their health and well-being (Iwasaki et al., 2013; Iwasaki et al., 2015).

However, evidence also suggests that mental health issues, specifically depression, impedes individuals' ability to derive meaningful experiences through their leisure. Multiple studies documented an inverse relationship between meaningfulness of leisure and depression (Iwasaki et al., 2013; Lu, 2011). Compared to people without depression, those with elevated depressive symptoms are less likely to participate in physical leisure activities (Blanco & Barnett, 2014) and use leisure as coping strategies (Nagata et al., 2018), as well as are more likely to face leisure constraints (Nimrod et al., 2012).

What remains unclear in the literature is: what in depression specifically makes it challenging for people to experience meaningfulness in their leisure? The features of depression are not only the feeling of despondence, but also the inability to experience positive affect, or

anhedonia. In fact, people with depression are reported to perceive constraints to not only participating in leisure, but also enjoying it (Nimrod et al., 2012), and anhedonia is negatively associated with leisure-based stress coping (Nagata et al., 2018). Furthermore, positive psychology researchers believe that hedonic well-being (e.g., positive affect) and eudaimonic well-being (e.g., meaning in life) are distinct from each other, and that hedonic well-being is an antecedent of eudaimonic well-being (King & Hicks, 2021). Therefore, it is conceivable that anhedonia is the underlying reason why people with depression experience reduced meaningfulness of leisure. However, to the best of our knowledge, the relationship between anhedonia and leisure-based meaning-making has not been examined.

Understanding this potential relationship could help leisure researchers and practitioners develop interventions and programs specifically designed to enhance meaningful leisure experience. Meaning-based interventions and treatments are inherently personalized, which addresses the criticism of the one-size-fits-all approach in some depression treatments, such as antidepressant medications (Cohen et al., 2019; Hicklin, 2016). Thus, the purpose of this study was to examine the relationship between depression, anhedonia, and leisure-based meaning-making.

## **Literature Review**

### **Meaningful Leisure**

Leisure is defined as psychological experiences that occur during free time and recreational activities, characterized by perceived freedom, positive emotions, and intrinsic motivation (Chick, 2010; Kleiber et al., 2011). Meaning-making through leisure (Iwasaki, 2017; Porter et al., 2010) is a conceptual framework to examine how people experience meaningful leisure. Iwasaki et al. (2015) defined meaning-making as ‘a process by which a person derives

meaning(s) from an activity' (p. 539), wherein meaning refers to 'a socially and contextually grounded psychological/emotional experience that holds inner significance for an individual' (Porter et al., 2010, p. 172). Iwasaki (2017) also distinguished meaning-making through leisure from meanings of leisure (e.g., Schulz & Watkins, 2007); the latter concerns how people define or perceive leisure whereas the former focuses on how leisure makes people's life meaningful.

Porter and colleagues (2010) conducted a comprehensive literature review on leisure-related meaning-making processes (e.g., Donald & Havighurst, 1959; Iwasaki, 2007; Iwasaki et al., 2006; Ragheb, 1996; Unger & Kernan, 1983). They identified five recurring themes: connection and belonging; identity; freedom and autonomy; control and power; and competence and mastery. Furthermore, they specified three outcomes of leisure-based meaning-making processes: positive emotions; positive thoughts and actions (i.e., optimism, hope, creativity, and strength); and human growth and development. Within a small sample of adults with Type 2 diabetes, Porter and colleagues (2012) identified positive correlations in medium to large size among the five themes of leisure-based meaning-making and the three outcomes.

In his conceptual paper, Iwasaki (2017) theorized that the themes of leisure-based meaning-making can be further categorized into the following seven. First, *identity* refers to one's perceived connection to who they are as a person as well as who 'we are' as a collective group through leisure engagement and community. Second, *creativity* suggests that leisure allows individuals to express themselves. Third, *connectedness* is perceived connection to social groups, spirituality, nature, and culture. Fourth, *harmony/balance* means one's realization that leisure is a flexible and liberating life domain and their adjustment of their lives' paces through leisure. Fifth, *coping/healing* indicates that leisure is a resource for stress coping and healing from traumas. Sixth, *growth/transformation* specifies leisure as the space for experiencing and

expressing post-traumatic growth, resilience, and empowerment. Seventh, leisure has the *experiential/existential* meaning, which Iwasaki associated with flow-induced vitality increase, identity development, and achievement.

Moreover, Iwasaki (2017, p. 422) believed that leisure engagement characterized by the above seven themes would lead to:

(1) a joyful life (having a happy and enjoyable life), (2) a composed life (e.g. making one's life more composed, focused, collected, and/or in control, by having a clear purpose, vision, and direction in life), (3) a connected life (e.g. socially, spiritually, culturally), (4) a discovered life (e.g. self-identity, self-discovery), and (5) a hopeful and empowered life (e.g. showing a sense of strength).

Iwasaki and colleagues argued that leisure has the power to bring about these different types of meaningful life in the context of 'at-risk' youth (Iwasaki & Hopper, 2017), people who survived suicide of close others (Froese et al., 2020), and general therapeutic recreation (Hopper et al., 2020).

From the meaning-making perspective, Hopper and colleagues (2019) worked with youth who experienced high-risk living conditions (e.g., mental illness, poverty) as well as adult practitioners. Their qualitative findings suggested that many forms of leisure were meaningful to them because it is served as the space to: build youth-adult relationships; make youth voices heard; foster mutual respect and balance power dynamics between youth and adults (e.g., authority vs. mentoring); increase one's reflexivity (e.g., awareness of stigma); and facilitate growth, transformation (i.e., changes in one's sense of self), and action to address problems. Similarly, Hopper and colleagues (2020) engaged 'at-risk' female youth who experienced mental illness in a youth-led leisure program. Their qualitative study found that this leisure

project became meaningful because youth participants: felt supported in their discovery and pursuit of new interests; developed a sense of community; engaged in problem-solving together; co-created safe space; and realized their potential and strengths within leisure and across other life domains. Despite some nuances unique to the contexts, Hopper and colleagues' studies supported Iwasaki's (2017) leisure-based meaning-making themes.

### **Depression and Meaningful Leisure**

Depression has been known as a barrier to leisure participation (Crawford & Godbey, 1987), which in turn can reduce the amount of positive affect one can experience. Depression causes a number of social and cognitive dysfunctions, which can undermine people's ability to experience meaningful leisure. For example, impaired social functioning has been identified as a hallmark disability related to depression (Kupferberg et al., 2016). Some people with depression do not experience enjoyment from social interaction (Brown et al., 2007), whereas others experience greater emotional pain from an even minor social rejection (Ehnvall et al., 2014). Studies reported that people with depression often lack theory-of-mind, resulting in struggles with empathy (Bora & Berk, 2016). In addition, studies reported heightened uncooperativeness among people with depression (Clark et al., 2013). It is likely that people with depression struggle with building personal connections with others and belonging to a group due to these social dysfunctions.

According to cognitive theories of depression (Beck, 2002), persons with depression tend to assess themselves, their behaviours, and the outlook in extremely negative ways. Negative self-assessment often leads to the feeling of worthlessness (Zahn et al., 2015), which may prevent them from acquiring positive self-image. Because people with depression tend to believe that 'whatever I do ends up a failure' (Blatt et al., 1982), they would not feel motivated to

explore who they are, resulting in unwillingness to pursue self-discovery. An extremely negative outlook is associated with hopelessness (Liu, 2015), which could prevent individuals with depression from developing and expressing identity through leisure.

Iwasaki and colleagues (e.g., Iwasaki et al., 2013; Iwasaki et al., 2014) examined the relationship between leisure-based meaning-making and well-being among racially diverse individuals with serious mental illnesses (e.g., schizophrenia, bipolar disorder, major depressive disorder). They employed the Leisure Meanings Gained Scale (LMGS; Porter, 2009) to measure the aforesaid five meaning-making themes (Porter et al., 2010). Iwasaki and colleagues (2013) reported the LMGS score had moderate to high positive correlations with leisure stress coping, leisure satisfaction, psychological adjustment to illness, and perceived recovery from mental illness, and a high negative association with leisure boredom. Iwasaki et al.'s (2014) regression further revealed that the LMGS was associated with psychiatric symptoms more strongly than leisure boredom and perceived active living. Iwasaki et al. (2015) conducted in-depth, qualitative interviews with part of the sample for the above quantitative studies (Iwasaki et al., 2013; Iwasaki et al., 2014). Their analysis indicated that various types of leisure activities allowed participants to derive meanings of enjoyment and peacefulness; focus and control; social and spiritual connection; self-discovery; and a sense of strength.

However, people with depression may face pronounced constraints to participating in, and perceiving benefits from, their leisure. For example, Nimrod et al.'s (2012) online ethnography of posts on virtual depression support communities indicated that certain types of leisure activities (e.g., socialization, exercise, outdoor recreation) were considered healthy. This was because the activities were deemed to help people with depression feel better about themselves, while also providing distractions, a sense of purpose, an opportunity for self-



expression, and moments of life reappraisal. Despite such potential meaningfulness of leisure, individuals with depression also faced constraints to leisure participation, such as lack of interest, lack of companions, and fear and anxiety, as well as constraints to benefiting from leisure participation, meaning that once enjoyable leisure become no longer fun. As to the reasons for the absence of leisure enjoyment, online community members listed a sense of required effort, communication difficulties, feelings of rejection, and upward social comparison. Huang and colleagues' (2019) study of Taiwanese women with breast cancer corroborated this positive relationship between depression and leisure constraints.

Indeed, studies have also found that there are different patterns of leisure engagement between people with and without depression. Dupuis and Smale (1995) found that older adults with severer depressive symptoms were less likely to partake in hobbies/crafts, visiting friends, and swimming than those with milder symptoms. Blanco and Barnett (2014) surveyed 974 university students of whom 334 were mildly depressed and 134 were moderately or severely depressed. The researchers found that students with mild depression did not enjoy sedentary, competitive, and physically active leisure as much as non-depressed counterparts, while students with mild depression also did not expect internal rewards, social interaction, challenge/skill development, and active engagement from leisure as much as the non-depressed students. In addition, students with moderate to severe depression had desired challenge/skill development less than non-depressed students. This point about skill development is consistent with Heo and colleagues' (2018) study about the relationship between serious leisure and depression. As a form of committed leisure, serious leisure often requires skill development over time and becomes meaningful (Stebbins, 2015). Heo and colleagues' findings based on older adults who played pickleball identified serious leisure as a robust, negative predictor of depression even

after controlling for the effects of social integration and optimism. Thus, depression may interfere with physical, social, and skill-intense leisure engagement.

### **Anhedonia and Meaningful Leisure**

Anhedonia is considered to be a relatively common symptom of depression, as a diagnosis of major depressive disorder must have either depressed mood or loss of interest or pleasure (i.e., anhedonia) according to Diagnostic and Statistical Manual of Mental Disorders, 5th Edition (DSM-5; American Psychiatric Association [APA], 2013). A previous study reported that approximately 38% of people with depression had anhedonia (Pelizza & Ferrari, 2009). Anhedonia is conceptualized as reduced positive affect due to dysfunctions in reward processing (Treadway & Zald, 2011). Persons with anhedonia, for example, experience lower levels of pleasure sensation from activity engagement compared to healthy individuals, and they anticipate less pleasure from future activity participation (Sherdell et al., 2012). These dysfunctions can cause a number of disadvantages in terms of leisure, including disengagement and amotivation, because they are not able to experience joy and other types of positive affect from activities (Blanco & Barnett, 2014; Nagata et al., 2018; Nimrod et al., 2012).

Anhedonia has attracted increasing attention because it is relatively stable compared to other symptoms of depression (Schraeder, 1997) and because it has consequences in one's daily living. Clinical consequences of anhedonia include a prolonged depressive episode (McMakin et al., 2012), a poor response to antidepressant treatment (Uher et al., 2012), and increased suicidal attempts (Auerbach et al., 2015). Consequences related to leisure behaviours include reduced motivation to engaging in leisure (Watson et al., 2020), social withdrawal (Shankman et al., 2010), and social functioning (Harrison et al., 2014).

King and Hicks (2021) reviewed articles related to positive affect and meaning in life and identified positive affect as the foundation of meaning in life. King and Hicks argued that ‘positive affect (i.e., feelings of happiness, cheerfulness, enjoyment, fun) is a robust, if controversial, antecedent of meaning in life’ (p. 569). Empirical studies also supported the relationship between positive affect and meaning in life as evidenced by robust correlation (see King & Hicks, 2021). In addition, a diary study (King et al., 2006) demonstrated that daily positive mood predicted retrospective meaning in life more strongly than daily meaning in life. These studies suggest that hedonic experience plays an important role in construing meaning in life. Often, leisure is a life domain where individuals perceive much enjoyment in their lives (e.g., Iwasaki, 2017; Porter et al., 2010).

Watson and colleagues (2020) conducted in-depth interviews investigating how youths with anhedonia experience their daily life. These authors argued that anhedonia causes significant challenges above and beyond loss of interest and pleasure. There is a chain of effects from lack of positive emotion, to struggles to maintain motivation, and to engagement in activities. These participants experienced no enjoyment from social interactions and felt disconnected from peers. In addition, participants discussed that they did not feel excited to explore who they are, which undermined their engagement in self-discovery. Watson and colleagues argued that youths with anhedonia lost a sense of connection and belonging and weakened their sense of self, which has direct implications for leisure-based meaning-making discussed above. Therefore, it appears that anhedonia could also interfere with leisure’s roles in meaning-making, such as connection and relationships (Hopper et al., 2019; Iwasaki, 2017; Porter et al., 2010) and self-discovery (Hopper et al., 2020; Iwasaki, 2017; Porter et al., 2017).

## Summary

Leisure experience is characterized by positive affect and intrinsic motivation (Chick, 2010; Kleiber et al., 2011). Studies have suggested that leisure is associated with better health and well-being when participation is perceived as meaningful (Iwasaki, 2008; Iwasaki et al., 2018; Newman et al., 2014). Depression is a known correlate with leisure-based meaning-making (Iwasaki et al., 2013; Lu, 2011). However, depression has two core symptoms: despondence and anhedonia (APA, 2013), and this distinction remains under-recognized in leisure studies. It is still unclear which symptom of depression makes it challenging for people to experience meaningfulness in their leisure. Thus, the purpose of this study was to examine the relationship between depression, anhedonia, and leisure-based meaning-making. The above literature review suggests that in general, there is a robust negative relationship between depression and leisure, specifically leisure-based meaning-making (e.g., Iwasaki et al., 2013; Iwasaki et al., 2014; Nimrod et al., 2012). Moreover, anhedonia appears to be an underlying reason why this negative relationship exists (e.g., King & Hicks, 2021; Hopper et al., 2019; Iwasaki, 2017; Watson et al., 2020). Statistically this can be expressed as mediations. Therefore, the current study examined the research question: does anhedonia mediate the relationship between depression and leisure-based meaning-making? The following hypotheses were tested:

*H<sub>0a</sub>*: There is no significant relationship between depression and leisure-based meaning-making.

*H<sub>1a</sub>*: Depression has a significant inverse relationship with leisure-based meaning-making.

*H<sub>0b</sub>*: Anhedonia does not significantly mediate the relationship between depression and leisure-based meaning-making.

$H_{1b}$ : The inverse relationship between depression and leisure-based meaning-making is mediated by anhedonia.

We also tested these hypotheses in the context of both overall leisure-based meaning-making and its sub-dimensions (see below).

## Method

### Sample

The sample of the current study was drawn from a larger study that investigated leisure participation of people with depression. The protocol of the study was approved by the Institutional Review Board at an institution with which the first author was affiliated. A cross-sectional online survey was conducted between December of 2016 and February of 2017. The current sample consisted of 155 respondents who had a history of major depressive disorder. To maximize the diversity of participant background such as socioeconomic status and mental health status, participants were recruited from multiple venues including depression support group meetings, an online depression research portal, a state-wide research registry, and an outpatient psychiatric service provider in the Midwestern United States. The first author visited depression support groups to inform the opportunity to participate in the survey. At the outpatient psychiatric service provider, their staff approached their clients to disseminate the information. For the online depression research portal and the state-wide research registry, an invitation email was sent to registered members who met the following inclusion criteria. Participants had to be 18 years old or older and had a history of major depressive disorder.

Table 1 summarizes demographic characteristics of our sample. The participants' average age was 38.86 years ( $SD = 14.90$ ). The male-to-female ratio was approximately 1 to 2, which is comparable with an epidemiological prevalence rate of depression (Kessler, 2003).

Approximately 20% were unemployed, which is similar to previous studies (e.g., Lerner et al., 2006). Compared to the general population (Ryan & Bauman, 2016), the sample of the current study (49.0%) had higher percentage of individuals who completed a college degree (32.5%).

Table 1 around here

## **Instruments**

The Snaith-Hamilton Pleasure Scale (SHAPS; Snaith et al., 1995) was utilized to measure anhedonia. The SHAPS is a 14-item instrument that assesses people's hedonic function by asking whether they would enjoy typically pleasant activities. Items include: 'I would find pleasure in my hobbies and pastimes', 'I would enjoy being with my family or close friends', and 'I would enjoy seeing other people's smiling faces'. To respond, participants used 4-point Likert scales (1 = strongly disagree to 4 = strongly agree). The sum score was used in our analyses. Previous studies reported that the SHAPS has reasonable convergent and discriminant validity (Franken et al., 2007; Snaith et al., 1995). The SHAPS has also shown adequate reliability as evidenced by high internal consistency ( $\alpha = .95$ ) and high three-week test-retest reliability (ICC = .70) among individuals with clinical depression (Franken et al., 2007). The alpha coefficient in this study was .87.

The severity of depressive symptoms was measured by a modified version of the 10-item Center of Epidemiologic Studies Depression scale (CESD-10; Andresen et al., 1994). Participants were provided with a 4-point unipolar scale (1 = rarely or none of the time, 4 = all of the time) for each item. The CES-D has been commonly used in leisure studies (Craike & Coleman, 2005; Iso-Ahola & Park, 1996). There is evidence of adequate criterion validity,

demonstrated by moderate to high correlations with clinician ratings (Weissman et al., 1977). High internal consistency of the scale has been reported within a psychiatric sample ( $\alpha = .89$ ; Björgvinsson et al., 2013). The modifications made were the removal of two items that a previous study associated with hedonic functions such as ‘I feel hopeful about the future’ and ‘I was happy’ (Carleton et al., 2013) in order to avoid collinearity with anhedonia (i.e., SHAPS). The alpha coefficient in this study was .83. The summed score was used for the analyses.

A 28-item Leisure Meaning Gained Scale – Short Form (LMGS; Porter, 2009) was used to measure multidimensional meaningful experiences that participants had in their leisure participation. The LMGS consists of six sub-scales: connection and belonging, internal balance, identity, control and power, freedom and autonomy, and competence and mastery. Face validity and content validity were established in the development process of the LMGS (Porter, 2009). Following the instrument manual provided by Porter (2009), participants were prompted to recall the time when they engaged in leisure (e.g., their favourite leisure activities, a specific leisure activity, or leisure in general). And they were asked, for example, if that made them feel a sense of wholeness, reflect on the status of their life, and let them test their skills. The 5-point unipolar scale (from 1 = never to 5 = always) was provided for each item. A high level of internal consistency has been reported with individuals with mental illness ( $\alpha = .94$ ; Iwasaki et al., 2013). The alpha coefficient in the current study was .89. The LMGS total and subscale sum scores were used in the following analyses.

Age in years, biological sex (0 = male, 1 = female), college degree (0 = no college degree, 1 = a college degree), and employment status (0 = employed or student, 1 = unemployed) were included as covariates in the analyses.

## Data Analysis

To understand the basic relationships among the constructs, zero-order correlations among depression, anhedonia, and leisure-based meaning-making were examined. In terms of leisure-based meaning-making, we used the LMGS total score as well as the subscale scores.

We were also interested in examining whether the inverse relationship between depression and leisure-based meaning-making is primarily due to anhedonia. This can be tested by regressing the LMGS score on depression and anhedonia simultaneously; if the inverse relationship between depression and LMGS disappears or weakens, it supports anhedonia's role as the primary negative influence on LMGS. Moreover, we must recognize that there is a known relationship between depression and anhedonia (Nelis et al., 2019; Wieman et al., 2021). These relationships can be best examined by mediation analysis. To test whether anhedonia mediates the relationship between depression and leisure meaning, the mediation analysis procedure was conducted using the PROCESS macro in SPSS (Hayes, 2018). Figure 1 shows our statistical model. Through the analysis, we estimated the total effect of depression on leisure-based meaning-making (c), the association between depression and anhedonia (a), the effect of anhedonia on leisure-based meaning-making (b), and the effect of depression on leisure-based meaning-making after the influence of anhedonia was controlled for (c'). If the (a) and (b) links are significant, it supports our mediation hypothesis (Rucker et al., 2011). All the demographic covariates, including age, sex, college education, and unemployment status, were entered in each model. We ran a series of mediation analyses with the LMGS total score as well as each of the LMGS subscales.

Figure 1 around here



## Results

### Zero-Order Correlation Analyses

The results of bivariate correlation analyses were summarized in Table 2. Leisure-based meaning-making was significantly and negatively associated with both depression ( $r = -.275, p = .001$ ) and anhedonia ( $r = -.324, p < .001$ ). Severer depression and severer anhedonia were associated with weaker experience of leisure-based meaning-making. Anhedonia and depression had a moderate correlation with each other ( $r = .492, p < .001$ ), indicating 24.2% shared variance between depression and anhedonia. This means that although anhedonia and depression are interrelated, they are also distinct from each other.

In terms of the leisure-based meaning-making subscales (see Table 2), greater depression was associated with weaker experiences of connection and belonging, internal balance, and identity in leisure contexts. Greater anhedonia was associated with weaker experiences of connection and belonging, internal balance, identity, and competency and mastery in leisure. Depression was not significantly associated with control and power nor freedom and autonomy in leisure, and the same applied to anhedonia's relationships with these sub-scale variables.

Table 2 around here

### Mediation Analyses

The hypothesized mediation models (see Figure 1) were tested using the PROCESS macro. First, greater depressive symptoms was significantly associated with lower LMGS total score ( $b = -.89, SE = .27, t = -3.31, p = .001$ ), after controlling for the effects of the demographic variables. In terms of the LMGS subscales, greater depressive symptoms was associated with

lower connection and belonging ( $b = -.44, SE = .13, t = -3.31, p = .001$ ) and lower identity ( $b = -.27, SE = .08, t = -3.16, p = .002$ ). Depressive symptoms was not significantly associated with the other subscales, that is, internal balance, control and power, freedom and autonomy, and competence and mastery, when the effects of the demographic variables were taken into account. These results partially supported the (c) path in the hypothesized models.

Second, the (a) path, or the relationship between depressive symptoms and anhedonia, was examined. The results found greater depressive symptoms was associated with severer anhedonia ( $b = .74, SE = .10, t = 7.65, p < .001$ ), which confirmed the path (a). Third, the paths (b) and (c') were examined. The results were summarized in Table 3. Severer anhedonia was associated with lower LMGS total score ( $b = -.64, SE = .22, t = -2.88, p = .005$ ) while the direct effect of depressive symptoms on the LMGS total score turned non-significant when the effect of anhedonia was taken into account ( $b = -.41, SE = .31, t = -1.33, p = .185$ ). In addition, the bootstrap confidence intervals of the indirect effect between depressive symptoms and the LMGS total score through anhedonia did not contain zero, which indicates statistical significance ( $a \times b = -.48, \text{bootstrap } SE = .17, 95\% \text{ CI } [-.80, -.12]$ ). These results suggest that the relationship between depressive symptoms and LMGS was fully mediated by anhedonia (Figure 2). Such full mediations were also observed in the models predicting connection and belonging as well as identity in leisure (see Table 3).

Figure 2 around here

Table 3 around here

## Discussion

The current study examined the relationship between depression, anhedonia, and leisure-based meaning-making. The results supported the hypothesis that the inverse relationship between depression and leisure-based meaning-making is mediated by anhedonia. In leisure literature, depression has been known as a negative predictor of leisure-based meaning-making (Iwasaki et al., 2013; Lu, 2011), but what in depression contributes to challenges in leisure-based meaning-making was rarely examined. The current study added to the knowledge base by demonstrating anhedonia, which is commonly experienced by people with depression (Pelizza & Ferrari, 2009), was more closely associated with leisure-based meaning-making than depression itself. People with severe levels of anhedonia have impairment in reward processing (Sherdell et al., 2012), resulting in greater challenges in experiencing positive affect during leisure as it has been described in the previous studies (Blanco & Barnett, 2014; Nagata et al., 2018; Nimrod et al., 2012). A potential reason why anhedonia mediates the relationship between depression and leisure-based meaning-making is the role of positive affect. Positive psychology researchers have argued that hedonic well-being (e.g., positive affect) is an antecedent of eudaimonic well-being (e.g., meaning in life) (King & Hicks, 2021), and anhedonia suppresses positive affect (Blanchard et al., 1998).

The results of the current study suggested that the hedonic factor (i.e., anhedonia) was closely associated with the eudaimonic factor (i.e., leisure-based meaning-making). Some research in hedonic and eudaimonic well-being treats these two concepts as unrelated constructs (e.g., Kopperud & Vitterso, 2008). However, King and colleagues (see King & Hicks, 2021) have demonstrated that hedonic and eudaimonic well-being are in fact closely related and proposed that hedonic well-being leads to eudaimonic well-being. Our findings support this

proposition within the context of leisure, that is, a life domain where individuals experience positive affect (e.g., Iwasaki, 2017; Porter et al., 2010).

Anhedonia can severely undermine enjoyment of leisure (Blanco & Barnett, 2014; Nagata et al., 2018; Nimrod et al., 2012). While enjoyment is commonly mentioned in leisure studies (e.g., Harrington & Dawson, 1995; Lee et al., 1994), it has not necessarily been a main focus of studies. As McCormick (2016) stated, leisure's pleasure-generating ability is regarded as one of the hallmarks of this experience. Hence, future studies should systematically investigate how and why people perceive certain leisure experiences enjoyable and in so doing they should explore how we can help people with anhedonia regain the joy of meaningful leisure.

We found that anhedonia fully mediated the inverse relationship between depression and leisure-based meaning-making. While depression was a significant predictor of leisure-based meaning-making at the bivariate level, the significant effect disappeared when the effect of anhedonia was taken into account. The bivariate relationship between depression and leisure-based meaning-making was consistent with the previous studies (Iwasaki et al., 2013; Lu, 2011). However, depression in these bivariate relationships may have been a proxy to anhedonia, which may be a real cause that undermines leisure-based meaning-making. For example, lack of enjoyment from social interaction can be seen among individuals with depression (Kupferberg et al., 2016); however, it is caused by dysfunctions in reward processing (i.e., anhedonia; Blanchard et al., 2011; Treadway & Zald, 2011). Anhedonia is also known to cause lack of motivation; boredom; flatten feelings such as emptiness, emotionless, and indifference; and the state of not caring about anything (Sherdell et al., 2012; Watson et al., 2020). Thus, it is reasonable that anhedonia has a stronger association with leisure-based meaning-making than other depressive symptoms.

A strength of the current study was the examination of LMGS subscales. Previous studies (e.g., Iwasaki et al., 2013; Iwasaki et al., 2014) used LMGS total scale only and subscales have not been examined. The current study found that anhedonia mediated depression's relationships with social connections and with identity. Connection and relationships (Hopper et al., 2019; Iwasaki, 2017; Porter et al., 2010) and self-discovery (Hopper et al., 2020; Iwasaki, 2017; Porter et al., 2017) may be the aspects of leisure-based meaning-making that are particularly vulnerable to the effects of depression, especially anhedonia. Theoretically, impaired social functioning due to depression (Kupferberg et al., 2016) can inhibit people from deriving social connection in their leisure engagement. However, anhedonia has also been identified as a predictor of social functioning (Blanchard et al., 2011; Tan et al., 2020). Our study lends credence to the latter position that anhedonia would be a primary interference with perceiving meaningful interpersonal connections through leisure. In addition, negative self-assessment due to depression was blamed as a cause of low self-esteem and poor self-image, which are closely associated with self-discovery (Waterman, 2011; Zahn et al., 2015). However, anhedonia has also been identified as a factor that undermines self-discovery, as often people with anhedonia cannot find what they are interested in and/or struggle maintaining interest in exploring who they are and who they want to be (Watson et al., 2020). Our evidence also suggests that the negative impact of depression on self-exploration through leisure is explained by anhedonia.

### **Implications**

When leisure practitioners work with individuals who potentially have a mental health condition, it is recommended to assess anhedonia. We encourage practitioners to administer the Snaith-Hamilton Pleasure Scale (SHAPS; Snaith et al., 1995), which is a widely-used valid and reliable self-report measure. This scale has a clinical cut-off point, and practitioners can consider

individuals who score above this cut-off as those who have a high level of anhedonia (see Snaith et al., 1995). Those who were identified as having a severe case of anhedonia may need extra help with and facilitation for experiencing enjoyment. Mindfulness activities and savouring techniques are known to boost the feeling of activity enjoyment (Shonin et al., 2015). If a practitioner has an extended period of time working with their client, a more comprehensive approach to anhedonia named positive affect treatment might be appropriate (Craske et al., 2019). This approach includes planning of enjoyable activities, attending to the enjoyment feeling, and compassion to self and others.

For future research, it is recommended to replicate this study with people with other serious mental illnesses such as schizophrenia and bipolar disorder. Such studies would help generalize the findings into a larger population. We also recommend that researchers and practitioners develop leisure-based facilitation techniques to counteract anhedonia. To do so, we must first understand what constrains enjoyment of leisure among people with anhedonia and how lack of enjoyment challenges their leisure-based meaning-making. An interdisciplinary team might be needed to complete such tasks.

### **Limitations**

Although this study found a significant effect of anhedonia on leisure-based meaning-making, there are a few limitations to be considered when interpreting the results. First, the data is cross-sectional in nature. While anhedonia is believed to be a relatively stable psychological construct (Schrader, 1997), the nature of cross-sectional data does not allow us to make causal implications. Second, our participant recruitment process did not involve in random sampling, which undermines the generalizability of our findings to an extent. This was because we did not have access to a large pool of community-living individuals with depression who represent

diverse social backgrounds. In this situation, relying on one source (e.g., an online depression research portal) could have introduced biases into our sample. Some venues such as depression support groups do not typically keep the roster due to confidentiality concern, which also made it impossible to conduct random sampling. Third, the sample size of the current study ( $N = 155$ ) is relatively smaller than other social science studies that typically utilize a large pool of individuals. Furthermore, no diagnosis screening was conducted specifically for this study. Although our recruitment took place at the venues where people with depression gather (e.g., depression support groups) and some of these sites allowed us to access those who confirmed that they had a diagnosis of depression (e.g., regional research registry, depression research portal), participants' diagnosis was based on their self-report. Therefore, generalization of the results requires caution.

### **Conclusion**

The current study discovered that anhedonia mediated the inverse relationship between depression and leisure-based meaning-making. The results suggest that the ability to feel enjoyment is an important factor to perceive meaningfulness in one's leisure. The topic of enjoyment, or lack thereof, is fundamental to leisure, and should be studied further in the future research.

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**Table 1***Summary of Demographics (N = 155)*

		n (%)
Sex	Female	96 (61.9%)
	Male	59 (38.1%)
Education	No college degree	79 (51.0%)
	Having a college degree	76 (49.0%)
Employment	Employed or student	119 (76.8%)
	Unemployed	34 (21.9%)
	Missing	2 (1.3%)
		Mean (SD)
Age		38.86 (14.90)

**Table 2**

*Summary of Intercorrelations, Means, and Standard Deviations for Key Variables (N = 155)*

	<i>Mean</i>	<i>SD</i>	1	2	3	3-1	3-2	3-3	3-4	3-5	3-6
1. Anhedonia	29.15	7.93	-								
2. Depressive symptoms	12.73	5.82	.492**	-							
3. Leisure Meaning Gained Scale (LMGS) Score	89.58	18.97	-.324**	-.275**	-						
LMGS subscales:											
3-1. Connection & belonging	34.52	9.45	-.308**	-.296**	.879**	-					
3-2. Internal balance	6.87	1.74	-.265**	-.173*	.522**	.421**	-				
3-3. Identity	20.10	5.92	-.262**	-.237**	.846**	.622**	.366**	-			
3-4. Control & power	13.90	3.23	-.146	-.134	.657**	.417**	.359**	.456**	-		
3-5. Freedom & autonomy	7.97	1.82	-.102	-.115	.477**	.249**	.176**	.346**	.445**	-	
3-6. Competency & mastery	6.22	2.87	-.200*	-.027	.613**	.350**	.186**	.531**	.405**	.373**	-

*Note.* \* $p < .05$ . \*\* $p < .01$ .

**Table 3**

*Summary of Mediation Analysis Results: Models with Leisure Meaning Gained Scale (LMGS) Total Score, Connection & Belonging, and Identity as a Dependent Variable*

Variable	LMGS Total Score				Connection & Belonging				Identity			
	<i>b</i>	<i>SE(b)</i>	<i>t</i>	<i>p</i>	<i>b</i>	<i>SE(b)</i>	<i>t</i>	<i>p</i>	<i>b</i>	<i>SE(b)</i>	<i>t</i>	<i>p</i>
Covariates												
Age	-.104	.105	-.988	.325	.027	.053	.518	.605	-.069	.033	-2.088	.039
Female	.763	3.198	.239	.812	-.219	1.602	-.137	.891	.892	1.012	.881	.380
College degree	1.062	3.081	.345	.731	1.023	1.543	.663	.508	-.201	.975	-.206	.837
Unemployment	-1.420	3.824	-.371	.711	-1.781	1.916	-.930	.354	-.504	1.210	-.417	.678
Depressive symptoms	-.413	.310	-1.333	.185	-.253	.155	-1.63	.106	-.149	.098	-1.518	.131
Anhedonia	-.642	.223	-2.883	.005	-.252	.112	-2.260	.025	-.157	.071	-2.221	.028
<i>R</i> <sup>2</sup>		.131				.131				.118		
<i>F</i>		3.641				3.647				3.232		
<i>p</i>		.002				.002				.005		
Indirect effect (a×b)		-.478				-.188				-.117		
Bootstrap 95% CI		(-.803, -.123)				(-.370, -.002)				(-.207, -.011)		

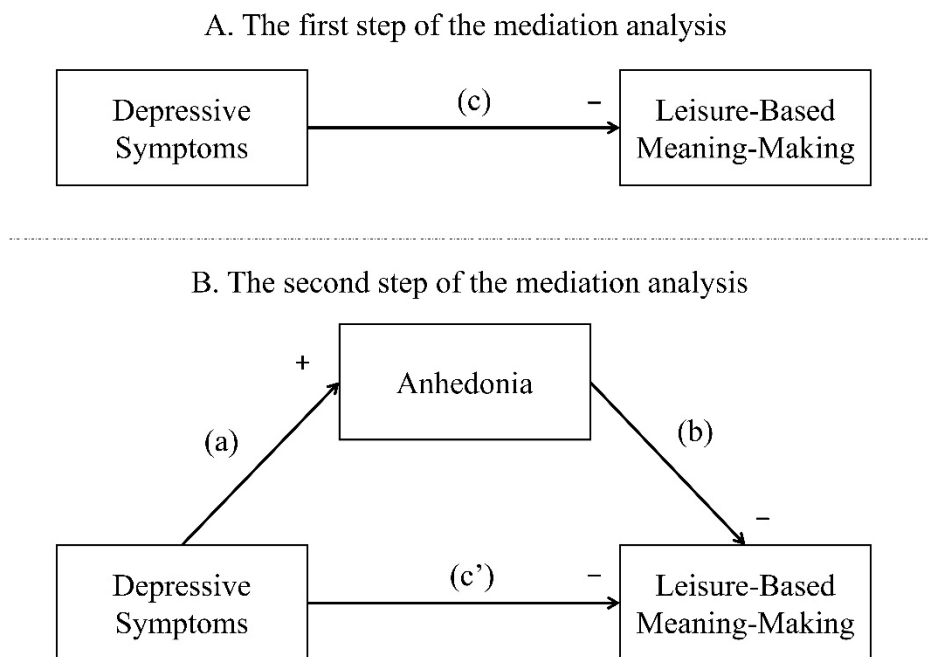


Figure 1. The hypothesized mediation models. Panel A shows the direct relationship between depressive symptoms and meaning experienced from leisure, which was examined first. Panel B shows the mediation model.



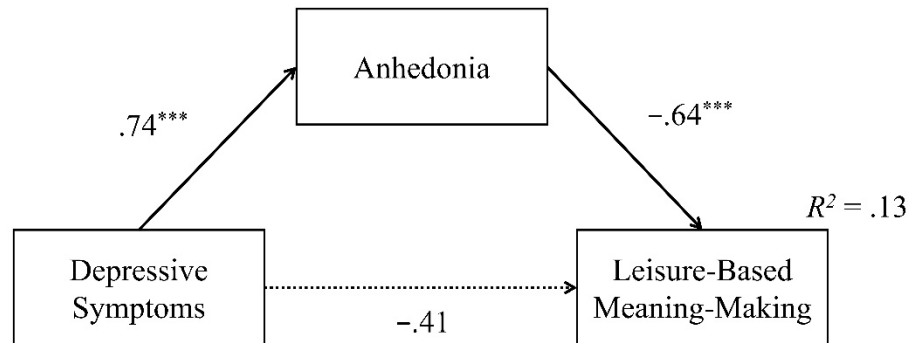


Figure 2. The estimated mediation model predicting LMGS total score. Unstandardized coefficients are shown. Age, sex, education, and employment status were controlled. \*\*\*  $p < .001$