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SUBJECTIVE WELL-BEING IN NAUTICAL SPORTS TOURISM: KEY FACTORS INFLUENCING PRACTITIONER TOURISTS' EXPERIENCES

BEM-ESTAR SUBJETIVO NO TURISMO NÁUTICO ESPORTIVO: IDENTIFICANDO FATORES DETERMINANTES NA EXPERIÊNCIA DE TURISTAS PRATICANTES

BIENESTAR SUBJETIVO EN EL TURISMO NÁUTICO DEPORTIVO: IDENTIFICANDO FACTORES DETERMINANTES EN LA EXPERIENCIA DE TURISTAS PRACTICANTES

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Abstract: Purpose – This study aims to identify and measure factors contributing to subjective well-being in individuals engaged in nautical sports during a trip, examining the roles of recreational involvement, nature relatedness, and flow state.

Design/methodology/approach – Six hypotheses were proposed, and data were analyzed using structural equation modeling (SEM) using Smart PLS and descriptive statistics. Recreational involvement and nature relatedness were exogenous variables, flow state acted as a mediator, and subjective well-being was the dependent variable.

Findings – Results indicate that neither recreational involvement nor nature relatedness directly enhances subjective well-being; instead, flow state serves as a mediator. Both recreational involvement and nature relatedness predict flow state, emphasizing its importance in improving nautical sports tourism experiences.

Practical implications – The findings highlight the need to design nautical tourism experiences that facilitate flow states, both in service delivery and physical infrastructure. Stakeholders should focus on creating environments that enhance immersion and engagement. Originality/value – This study reaffirms the centrality of flow state in achieving well-being in nautical sports tourism and innovates by empirically testing the relationship between nature relatedness and flow state—a connection not previously explored in the literature.

Research limitations – This study has some limitations, including difficulties in reaching a specific sample size for robust analyses, and potential recall bias in responses. Additionally, the heterogeneity of the sample (athletes and non-athletes) may have influenced key variables like recreational involvement, nature relatedness, and flow experience.

Keywords: recreational involvement; nature relatedness; flow state; subjective well-being; nautical tourism.

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Resumo: Objetivo – Este estudo teve como objetivo identificar e medir os fatores que contribuem para o bem-estar subjetivo em indivíduos (atletas e praticantes) envolvidos em esportes náuticos durante uma viagem, analisando o papel do envolvimento recreacional, da conexão com a natureza e do estado de fluxo.

Desenho/metodologia/abordagem – Foram propostas seis hipóteses, e os dados foram analisados por meio de modelagem de equações estruturais (SEM) utilizando Smart PLS e estatística descritiva. O envolvimento recreativo e a conexão com a natureza foram variáveis exógenas, o estado de fluxo atuou como mediador, e o bem-estar subjetivo foi a variável dependente.

Resultados – Os resultados indicam que nem o envolvimento recreacional nem a conexão com a natureza aumentam diretamente o bem-estar subjetivo. No entanto, o estado de fluxo atua como um mediador, sendo influenciado por ambos os construtos. Esses achados reforçam a importância do estado de fluxo na qualidade das experiências de turismo esportivo náutico.

Implicações práticas – Destaca-se a necessidade de desenvolver infraestruturas e serviços que facilitem o estado de fluxo, promovendo maior imersão e engajamento durante as atividades náuticas. Recomenda-se que gestores e organizadores priorizem experiências que estimulem a imersão e o envolvimento.

Originalidade/valor – Este estudo reafirma a centralidade do estado de fluxo no bem-estar em turismo esportivo náutico e inova ao testar empiricamente a relação entre conexão com a natureza e estado de fluxo – uma associação ainda não explorada na literatura.

Limitações da pesquisa – Este estudo apresenta algumas limitações, incluindo dificuldades em alcançar um tamanho amostral específico para análises mais robustas e possíveis vieses de memória nas respostas. Além disso, a heterogeneidade da amostra (atletas e não atletas) pode ter influenciado variáveis-chave, como o envolvimento recreativo, a conexão com a natureza e a experiência de fluxo.

Palavras-chave: envolvimento recreacional; relação com a natureza; estado de fluxo; bem-estar subjetivo; turismo náutico.

Resumen: Propósito: Este estudio buscó identificar y medir los factores que contribuyen al bienestar subjetivo en practicantes de deportes náuticos durante viajes, examinando el rol del compromiso recreativo, la conexión con la naturaleza y el estado de flujo.

Diseño/metodología/enfoque – Se plantearon seis hipótesis, y los datos se analizaron mediante modelos de ecuaciones estructurales (SEM) utilizando Smart PLS y estadística descriptiva. El involucramiento recreativo y la conexión con la naturaleza fueron variables exógenas, el estado de flujo actuó como mediador, y el bienestar subjetivo fue la variable dependiente.

Hallazgos: Los resultados muestran que ni el compromiso recreativo ni la conexión con la naturaleza mejoraron directamente el bienestar subjetivo. Sin embargo, el estado de flujo surgió como un mediador, influenciado por ambos constructos. Estos hallazgos refuerzan la importancia del estado de flujo en la calidad del turismo deportivo náutico.

Implicaciones prácticas: Se destaca la necesidad de diseñar infraestructuras y servicios que faciliten el estado de flujo, promoviendo una mayor inmersión y participación durante las actividades náuticas. Se recomienda que los gestores prioricen experiencias que estimulen este estado psicológico.

Originalidad/valor: Este estudio reafirma la centralidad del estado de flujo en el bienestar del turismo náutico e innova al probar empíricamente la relación entre conexión con la naturaleza y estado de flujo, una asociación no explorada previamente en la literatura.

Limitaciones de la investigación: Este estudio tiene algunas limitaciones, incluidas las dificultades para alcanzar un tamaño de muestra específico que permita análisis más robustos y el posible sesgo de memoria en las respuestas. Además, la heterogeneidad de la muestra (atletas y no atletas) pudo haber influido en variables clave como la implicación recreativa, la conexión con la naturaleza y la experiencia de flujo.

Palabras Clave: involucramiento recreativo; relación con la naturaleza; estado de flujo; bienestar subjetivo; turismo náutico

INTRODUCTION

Literature often portrays travel as an opportunity for intense experiences, self-discovery, and a source of happiness (Smith & Dieckmann, 2017; McCabe & Johnson, 2013; Filep et al., 2022). In contemporary perspectives, leisure is not a fixed or universal concept, but rather a subjective and dynamic experience shaped by personal values, emotions, and social context (Jennings, 2007; Houge Mackenzie & Hodge, 2019). Within this view, leisure and tourism experiences gain relevance as they contribute to emotional engagement, identity expression, and enhanced well-being.

According to the bottom-up spillover theory of subjective well-being, satisfaction experienced in one life domain can spill over to influence other domains, such as professional, financial, and romantic life (Diener & Emmons, 1984; Sirgy et al., 2001). As a subset of leisure, tourism is considered a significant life dimension (McCabe & Johnson, 2013; Yan et al., 2024). Thus, the satisfaction derived from travel experiences may influence overall life satisfaction, as proposed by the theory (Kim et al., 2021; Pagán, 2020).

Life satisfaction refers to an individual's conscious judgment about their life based on personal experiences and evaluative criteria (McCabe & Johnson, 2013; Tien et al., 2021). Studies on how this judgment influences human satisfaction, and how the balance between positive (joy, contentment, pleasure) and negative (worry, anxiety, irritation) emotions affects happiness, form the foundation of research on subjective well-being (Diener et al., 1998) and, similarly, on subjective well-being in tourism (Tien et al., 2021).

The existence of specific goals during travel can enhance tourists' positive emotions and overall satisfaction (Ertaş, 2020; Sirgy, 2010). Nawijn (2011b) supports this idea, noting that specific activities, such as sports, tend to elevate well-being. These practices also create opportunities for achieving high cognitive performance, marked by focus and concentration, resulting in heightened levels of pleasure, satisfaction, and well-being—a state referred to as "flow" (Csikszentmihalyi, 1990; Nagy et al., 2021).

Individuals who engage in sports activities while traveling, referred to by Gibson (2005) as "sport tourists", experience unique interactions between activity, people, and place (Yan et al., 2024; Weed & Bull, 2004). Some of these activities take place in natural and marine environments, which are characterized by their multifunctionality (Vázquez et al., 2021) and defined as nautical sports tourism—distinguished by the "unique interaction between people, activity, and water" (Cavalheiro et al., 2021, p. 134).

Even in leisure and travel contexts, participants in sports activities often display a high level of involvement with their chosen pursuits (Jennings, 2007; Nagy et al., 2021). This deep integration of personal values with the activity elevates its importance and centrality in their lives, reflecting their identity (Orams, 1999). Selin and Howard (1988) coined the term "recreational involvement" to describe this phenomenon.

Additionally, the literature has increasingly emphasized tourists' contact with natural environments where sports activities occur. This interaction has been linked to well-being, personal growth, satisfaction, self-esteem, engagement, positive social relationships, and place attachment (Boudreau et al., 2020; Filep et al., 2022; Houge Mackenzie, 2021; Houge Mackenzie & Hodge, 2019; Houge Mackenzie et al., 2011; Houge Mackenzie et al., 2021).

The intersection between sports and tourism has significantly contributed to the development of public and private policies and initiatives aimed at improving mental and physical health and well-being. According to the United Nations World Tourism Organization (UNWTO), the tourism sector aligns with the "2030 Agenda," which emphasizes well-being and health, sustainable economic growth, sustainable consumption and production, and the responsible use of marine resources (UNWTO, 2015).

In this context, increased contact with nature, sustainable tourism practices, and a subjective connection to the proposed activities and destinations have become a growing focus in tourism trend reports (SEBRAE, 2020, 2021). This scenario reveals fertile ground for studies that explore the connections between nautical sports, well-being, and travel, attracting the interest of managers and researchers dedicated to these relationships.

However, empirical research on subjective well-being in travel contexts emphasizes the overall travel experience, leaving significant gaps in comprehending specific activities or niche segments (Mayer et al., 2019; McCabe & Johnson, 2013; Nawijn, 2011a, 2011b; Nawijn et al., 2010, 2013; Saayman et al., 2018; Sthapit & Coudounaris, 2018). Furthermore, research on the relationship between tourists and nature in nautical sports tourism remains scarce. Cavalheiro et al. (2021) highlight that the literature on nautical sports tourism is still fragmented and underdeveloped, emphasizing the need for studies that examine the impact of this type of tourism on the well-being of tourists, residents, and workers.

Based on this, the research question guiding this study is: What factors influence the subjective well-being of individuals who engage in nautical sports activities during their travels?

Given the identified research problem and gaps, this study aims to identify and measure the factors influencing the subjective well-being of individuals (athletes and practitioners) participating in nautical sports activities while traveling.

LITERATURE REVIEW

Subjective well-being (SWB) is an integrative concept associated with happiness, defined as the state in which high levels of life satisfaction are combined with the frequent presence of positive feelings and the rare occurrence of negative feelings (Diener et al., 1998; McCabe & Johnson, 2013; Yan et al., 2024). Diener (2009) identifies the components of subjective well-being analysis as cognitive and affective dimensions, or a combination of both. The cognitive aspect involves individuals' evaluations of their lives, while the affective aspect encompasses positive emotions, such as joy and contentment, or negative emotions, such as anxiety (Diener et al., 2003).

Among the various theories addressing happiness, the "bottom-up spillover theory of subjective well-being" posits that individuals' life judgments result from a mental calculation that weighs moments of pleasure and contentment against moments of displeasure. Thus, overall life satisfaction—and consequently an individual's well-being—derives from the accumulation of these moments (Diener & Emmons, 1984). In the tourism context, this evaluation emerges from tourists' perceptions of their travel and leisure experiences (Oliva, 2023; Sirgy et al., 2011).

Subjective well-being has been extensively studied in sports tourism, encompassing various audiences and modalities. Research includes studies on football fans (Cho et al., 2020), trail enthusiasts (Kim et al., 2015), skiers and dancers (Bosnjak et al., 2016), amateur triathletes (An et al., 2021), adventure sports participants (Su et al., 2021), surfers (Cheng & Lu, 2015), divers (Marconi et al., 2023), and others (Singleton, 2019; Wu et al., 2020; Kim & Hall, 2021). However, nautical tourism, which focuses on sports and leisure, remains an underexplored subfield.

Highlighting the subjective aspects of nautical tourism focused on sports and leisure, Cavalheiro et al. (2021) adopted Weed's (2005) framework on sports tourism. In this context, nautical tourism is defined as a "unique interaction between people, activity, and water" (p. 134). Studies indicate that tourists engaged in nautical activities seek challenging and educational experiences (Cheng & Lu, 2015; Jennings, 2007), as well as sensations such as excitement, pleasure, personal well-being (Jennings, 2007), and the attainment of the flow state (Cheng & Lu, 2015; Jennings, 2007; Orams, 1999; Strassburger & Macke, 2012). These activities also foster moments of relaxation and euphoria, creating challenging experiences and sensory, communal, and nature-connected interactions capable of enhancing positive emotions (Cavalheiro et al., 2021).

The interactions proposed by Cavalheiro et al. (2021) have been examined in empirical studies, mainly through constructs such as recreational involvement. For example, Cheng and Lu (2015) analyzed the relationship between recreational involvement among surfing tourists and their subjective well-being. However, interactions with marine environments remain underexplored. Jennings (2007) noted that while marine tourism and cruise tourism gained academic attention in the early 21st century, "few studies have focused specifically on water-oriented experiences in the broad fields of tourism, sport, leisure, and recreation" (p. 2).

Additionally, when exploring nautical activities, the flow state emerges as a central element in understanding how these experiences contribute to tourists' well-being. Among nautical activities, studies on the flow state include modalities such as surfing (Cheng & Lu, 2015) and rafting (Jones et al., 2000; Schüler & Nakamura, 2013; Strassburger & Macke, 2012; Wu & Liang, 2011). Diener (2009) states that the flow theory constitutes one of the most explicit formulations of subjective well-being, emphasizing that pleasure and engagement arise when there is a balance between the proposed challenge and the individual's ability to meet it.

Recreational involvement and subjective well-being

Recreational involvement is rooted in research on ego involvement, as developed by Selin and Howard (1988), who introduced the concept into the context of leisure. According to the authors, this concept fundamentally depends on the individual's deep identification with the activity that occupies a central position in the individual's life. This centrality arises primarily from the alignment of the activity's values with the personal values of its practitioner, offering the practitioner an opportunity to reaffirm these values and recognize their own identity through leisure activities. The activity thus transcends a purely utilitarian function and becomes a medium for expressing the individual's self-image (Cheng & Lu, 2015). It is a multidimensional construct comprising three components: attraction, centrality, and self-expression (McIntyre & Pigram, 1992).

The first dimension, attraction, encompasses two aspects: the perceived importance of the activity and the pleasure it provides (Havitz & Dimanche, 1990). Importance pertains to the personal interest the activity elicits in the individual, capturing their specific attention and engaging them. Conversely, pleasure relates to the enjoyment, joy, and sensory stimulation experienced during the activity. Thus, attraction refers to the extent to which a given activity stands out due to its importance, unique meaning, and the pleasure it induces (Cheng & Lu, 2015). Attraction has consistently emerged as the most significant predictor in studies examining recreational involvement and subjective well-being (Lee et al., 2023).

The second dimension, centrality, encompasses the social connections arising from the activity and the role this activity plays in the individual's life. It reflects a socially inclined dimension that evaluates the importance of a leisure activity relative to other life interests.

Lastly, self-expression represents the dimension that addresses expressing one's identity through participation in a specific activity. By fulfilling this need for self-expression, the activity fosters high commitment and involvement (Selin & Howard, 1988).

Leisure satisfaction is a key life domain that significantly influences overall life satisfaction (Sirgy et al., 2011). Studies on recreational involvement explore this domain (Lee, 2022). Sports activities increase well-being and happiness (Nawijn, 2011a), while leisure involvement affects leisure satisfaction (Chen et al., 2013; Matte et al., 2021). Regular participation in leisure activities tends to reduce negative feelings and enhance well-being (Cheng & Lu, 2015).

Based on this framework, the first hypothesis of this study proposes:

H1: Recreational involvement among tourists engaging in nautical sports during their travels has a significant positive influence on their subjective well-being.

Nature relatedness and subjective well-being

Nature relatedness can be understood as individuals' affective, cognitive, and experiential relationship with the natural world, or a subjective sense of connection to nature (Nisbet et al., 2011). This construct seeks to capture people's identification with nature, their worldviews related to nature, familiarity with nature, comfort in natural environments, and their desire to spend time in nature (Tsaur et al., 2013). It is distinct from other constructs addressing the human–nature relationship, as it includes indicators of well-being and happiness, both at the trait and state levels (Zelenski & Nisbet, 2014).

Sport-oriented nautical tourism activities rely on intentional interaction with the marine environment, reflecting tourists' voluntary choice to participate during their travels. The marine environment fosters a connection to something greater than oneself (White et al., 2020), while offering pleasant bodily sensations (Houge Mackenzie et al., 2011). Although often associated with green environments, marine settings possess unique characteristics that specifically enhance individual well-being. These include: a) the sounds produced by the marine environment, which can induce calmness and tranquility (Thoma et al., 2018); b) the ability to encourage physical activity, often for longer durations compared to other environments (Elliott et al., 2015); and c) the distinct light, sounds, and patterns of the marine environment, which participants have reported as contributing factors to stress reduction in aquatic settings (Bell et al., 2015).

Additionally, exposure to aquatic environments during childhood can foster familiarity with nature into adulthood and predict well-being in later life stages (Vitale et al., 2022). In summary, contact with the natural marine environment has yielded direct physical and mental health benefits, including higher overall life satisfaction (White et al., 2017; Laffan, 2018). In this context, the second hypothesis is:

H2: Nature relatedness among tourists engaging in nautical sports during their travels has a significant positive influence on their subjective well-being.

Flow state and subjective well-being

The flow state represents an optimal condition that promotes profound pleasure and high cognitive performance. Body and mind work harmoniously to produce a high level of focus and concentration that is not easily interrupted (Moneta & Csikszentmihalyi, 1996; Nakamura & Csikszentmihalyi, 2014). It is regarded as a state of optimal involvement (Sirgy et al., 2016). While this state can occur unexpectedly due to coincidental factors, it is more commonly achieved through structured activities, such as sports (Roettgers, 2014).

Nine dimensions characterize this optimal state. The first is balancing challenges and skills, where the proposed challenges align with the individual's abilities. Second, immediate feedback facilitates necessary adjustments within a short timeframe. Third, the goals are clearly defined, making them quickly understandable (Jackson, 1992, 1995). Once these three core dimensions are met, six others may follow: 1) intense concentration, which eliminates distractions from external stimuli (Jackson, 1992); 2) merging of action and awareness, reflecting immense absorption where the individual loses the sense of boundaries between self and activity (Jackson, 1992); 3) loss of self-consciousness, reducing everyday concerns and centering the person in the present moment (Roettgers, 2014); 4) sense of control, culminating in a heightened sense of mastery over the activity (Csikszentmihalyi, 1990); 5) distorted sense of time, where time feels faster or slower than usual (Jackson & Csikszentmihalyi, 1999); and 6) autotelic experience, where the activity is intrinsically rewarding and performed for its own sake, without external incentives (Roettgers, 2014).

Given their structured nature, sports are a promising avenue for achieving flow. Positive sensations and well-being are frequently reported in qualitative studies with athletes (Jackson, 1995), occurring regardless of outcomes and thus applicable to both competitive and non-competitive contexts. This brings us to the following hypothesis:

H3: Tourists' flow state when engaging in nautical sports during their travels has a significant positive influence on their subjective well-being.

Recreational involvement and flow state

Recreational involvement is present in tourism and leisure activities. It refers to the experience of leisure and recreation at its most essential, capable of leading individuals to deeper fulfillment. With each iteration, the proposed challenges and execution abilities become increasingly complex and balanced (Havitz & Dimanche, 1990)—the fundamental condition for achieving flow.

Flow is a transient cognitive and affective state that fosters self-improvement. Once in flow, individuals are likely to repeat the experience and refine their performance (Jackson, 1992). This repetition enhances skill development, increases complexity and reinforces the conditions for optimal experiences (Cheng et al., 2015). According to Csikszentmihalyi (1990), engaging in activities to overcome challenges and pursue pleasure through effort aligns with the flow state.

Activities central to individuals' lives prompt greater information-seeking, commitment, and preference for more challenging configurations, thereby fostering complexity and facilitating optimal experiences (Cheng et al., 2015). Consequently, deep involvement in leisure activities, including nautical sports, supports engagement and focus, enabling the flow state, which is the fourth hypothesis of this study:

H4: The recreational involvement of tourists engaging in nautical sports during their travels has a significant positive influence on their flow state.

Nature relatedness and flow state

Natural environments provide opportunities for profound contemplation, wonder, and transcendence (Tam, 2013), while offering diverse bodily sensations and sensory experiences (Houge Mackenzie et al., 2011). Similar to flow, nature relatedness involves a sense of unity or fusion with something seemingly beyond oneself. Literature suggests that individuals participating in sports in natural settings tend to develop a deeper connection with these environments (Brymer et al., 2009).

According to White et al. (2015), activities in natural environments yield more significant benefits than indoor activities. Their study comparing simulated urban, green, and blue environments revealed that coastal and marine settings can particularly facilitate flow, evidenced by the loss of conventional time perception.

While empirical studies on the relationship between nature relatedness and flow are limited, Houge Mackenzie et al. (2011) propose that nature relatedness, encompassing affective, cognitive, and experiential dimensions, may aid in achieving flow. Leisure experiences involving physical activities in natural environments are therefore expected to promote flow:

H5: Nature relatedness among tourists engaging in nautical sports during their travels has a significant positive influence on their flow state.

The mediating role of flow state

The positive relationship between recreational involvement and subjective well-being is well-documented (Cheng & Lu, 2015; Wu et al., 2020; Lee et al., 2022). However, various factors can influence the well-being experienced by individuals. Cheng and Lu (2015) identified flow as a central factor mediating the relationship between recreational involvement and the well-being of surfing tourists.

Engaging in an activity central to an individual's life, offering challenges and opportunities for skill development and personal growth, creates ideal conditions for achieving flow. Greater involvement enhances concentration, which is linked to higher levels of subjective well-being (Vittersø et al., 2001; Cheng & Lu, 2015; Cheng et al., 2015).

Flow also depends on the interaction between personal characteristics and environmental contexts (Bonaiuto et al., 2016).

Each setting's physical or subjective attributes can affect flow intensity. Boudreau et al. (2020) emphasize exploring nature immersion's effects on flow. Additional evidence suggests that experiences achieving flow generate higher well-being than those that do not (Clarke & Haworth, 1994).

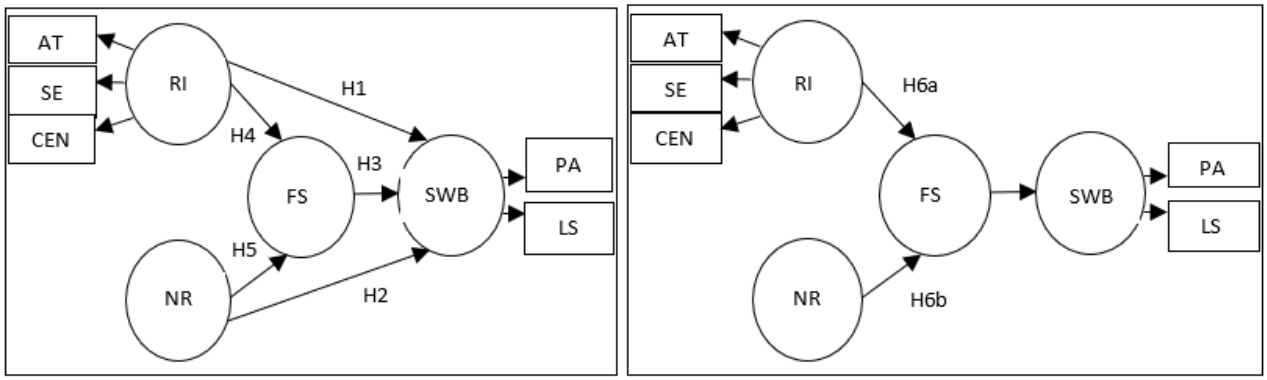
Thus, consistent with the literature positioning flow as central to nautical tourism activities and relevant to the independent variables of recreational involvement and nature relatedness, as well as the dependent variable of subjective well-being, it is proposed:

H6a: The flow state mediates the relationship between recreational involvement and subjective well-being.

H6b: The flow state has a mediating role between nature relatedness and subjective well-being.

These hypotheses form the basis of the model presented in Figure 1 below:

Figure 1 – Proposed model and mediation model



Note: AT = Attraction; SE = Selfexpressiveness; CEN = Centrality; RI = Recreation involvement; NR = Nature relatedness; FS = Flow state; SWB = Subjective well-being; PA = Positive affect; LS = Life satisfaction.

METHODOLOGY

This study investigates the relationships between recreational involvement, nature relatedness, flow state, and subjective well-being among tourists participating in nautical sports. It employs a hypothetical-deductive approach and quantitative methodology, with hypotheses tested using structural equation modeling (SEM) (Nunkoo et al., 2013; Hair et al., 2019).

The research instrument was developed through two pre-tests—the first involved senior researchers who provided feedback on item layout, terminology, and content validity. Experts also validated the translation of scales from English to Portuguese, ensuring their suitability for nautical sports.

The refined questionnaire was distributed via Amazon Mechanical Turk for a week to assess validity and internal consistency. It included filter questions and closed-ended questions on respondents' engagement in their primary nautical activity and travel experiences.

Recreational involvement was measured using McIntyre and Pigram's (1992) scale, while nature relatedness employed the NR-6 scale (Nisbet & Zelenski, 2013). The Core Flow State Scale assessed flow state (Martin & Jackson, 2008), and subjective well-being was measured using the overall life satisfaction and positive affect scales (Diener et al., 1985; Diener & Emmons, 1984).

Negative affects were excluded from the analysis based on findings by Sirgy et al. (2011), which showed that only positive affects significantly influenced tourist satisfaction in leisure and travel contexts.

The questionnaire concluded with questions to collect respondents' sociodemographic data.

Data Collection and Sample

The data collection phase occurred from November 7, 2022, to February 7, 2023. A link was shared through various channels, including Instagram and Facebook posts (in specific groups), LinkedIn, WhatsApp messages, and emails. Additional approaches were implemented to increase sample size, such as direct contact with representatives of various nautical

sports modalities and the publication of research dissemination notes in specialized media outlets. The study had a national reach due to its online nature, resulting in a convenience sample. At the end of the collection period, 215 questionnaires were filled out.

Among the respondents, 199 met the first filter criterion (being practitioners of nautical sports). Of these, 88.9% had practiced such activities during travel and were eligible to proceed with the subsequent items. This process resulted in 177 valid questionnaires for analysis. All participants were informed about the objectives of the research, the voluntary nature of their participation, and the confidentiality of the information provided, through a Free and Informed Consent Form (Termo de Consentimento Livre e Esclarecido – TCLE).

RESULTS AND DISCUSSION

Sample characteristics

The sample consisted of 177 questionnaires completed by water sports practitioners who had engaged in such activities during their travels. The sample was predominantly male, representing 57.1%. The most common age group was 45–54 years (32.2%), followed by the 55–64 age group (24.3%).

Most participants completed higher education (30.5%), and more than half of this group had also completed some postgraduate study (64.7%). Household income was moderately distributed, with a slight concentration in the income groups of 3–5 minimum wages (26%) and participants with incomes exceeding 12 minimum wages (20%).

Participants were asked about the duration and level of their engagement in water sports. The results revealed a highly experienced sample, with the majority (63.4%) having practiced water sports for over four years and another 21.5% having done so for three to four years. Respondents were also requested to identify the water sport they practiced most frequently. This question was important for those involved in multiple activities, as it provided a reference point for answering subsequent items.

The questionnaire also addressed participants' travel habits and motivations related to their water sports activities. Respondents could select multiple answers when asked about their primary travel motivations related to water sports. Participation in events such as regattas, competitions, and athlete gatherings received the highest responses (=93). In this case, sports practice was the primary motivation for travel (Gibson, 2005). However, water sports activities also occurred during leisure trips, where the opportunity for practice was leveraged (=83).

Model testing

The following data analysis phase involved structural equation modeling (SEM) to test the theoretical model proposed in this study. The Kolmogorov-Smirnov test indicated the variables' non-normality, leading to the choice of variance-based structural equation modeling (PLS-SEM), which is suitable for analyzing relationships between latent variables (Sarstedt et al., 2011). The data from the 177 valid questionnaires were processed using SmartPLS 4.

Due to higher-order constructs (recreational involvement and subjective well-being), the process followed two stages, as recommended for reflective-reflective higher-order constructs (Sarstedt et al., 2019). Higher-order constructs simplify the structural model by reducing the number of relationships, making the model more parsimonious and more straightforward to interpret (Hair et al., 2018).

The quality of the constructs was assessed based on the evaluation of the measurement model. This assessment began with factor loadings, followed by the establishment of construct reliability and validity.

In the first stage, all second-order variables were tested in the model. Items with a factor loading of at least 0.70 were retained (Hair et al., 2020), while those with lower loadings were excluded (NRI, NRII, NRIII, FSVI, FSVII, FSVIII, FSIX, LSIV, and LSV).

Cronbach's Alpha was applied to verify instrument reliability. Commonly used reliability metrics include Cronbach's Alpha and Composite Reliability. In this study, Cronbach's Alpha ranged from .764 to .973, and Composite Reliability ranged from .863 to .980, meeting the minimum criterion of .701 (Hair et al., 2016). The average variance extracted (AVE) for each construct was above 0.50, as recommended in the literature (Hair et al., 2016), ensuring validity and reliability. Finally, the Stone-Geisser Q^2 values for the constructs were greater than zero, enabling predictive validity analysis for the model (Hair et al., 2018). The indices are presented in Table 1 below:

Table 1 - Confirmatory Factor Analysis and constructs' reliability and validity

Itens	Loadings	C's A	rho_A	CR	AVE	Q²
Positive affect		**0.961**	**0.965**	**0.974**	**0.927**	**0.094**
PAI - In the past few months, I have frequently experienced feelings of happiness. PAII - In the past few months, I have frequently experienced feelings of joy. PAIII - In the past few months, I have frequently experienced feelings of satisfaction. PAIV - In the past few months, I have frequently experienced feelings of pleasure.	0.954 0.971 0.971 0.964	-	-	-	-	-
Selfexpressiveness		**0.841**	**0.849**	**0.904**	**0.760**	
SEI - When I engage in this nautical activity, I can fully express myself. SEII - I feel that I can have deep conversations with people who also practice it. SEIII - I feel that engaging in this nautical activity helps me better understand myself.	0.900 0.809 0.903	-	-	-	-	-
Attraction		**0.844**	**0.853**	**0.895**	**0.682**	
ATI - The nautical activity I practice is very important to me. ATII - The nautical activity I practice is an enjoyable activity. ATIII - The nautical activity I practice is the activity that brings me the greatest satisfaction. ATIV - The nautical activity I practice relaxes me and eases the pressures of daily life.	0.857 0.742 0.878 0.820	-	-	-	-	-
Centrality		**0.764**	**0.773**	**0.865**	**0.682**	
CENI - I feel that my life is deeply connected to this nautical activity. CENII - I enjoy talking about this nautical activity with my friends. CENIII - I have many friends who practice the same nautical activity as I do.	0.848 0.884 0.738	-	-	-	-	-
Flow State		**0.877**	**0.882**	**0.907**	**0.618**	**0.323**
FSI - When practicing my nautical activity, I feel completely involved. FSII - When I am practicing my nautical activity, I feel as if everything works. FSIII - I feel connected to what I am doing when I am practicing my nautical activity. FSIV - When I am practicing my nautical activity, I have the feeling that I can perform it easily and effortlessly. FSV - I feel that I am in control when I am practicing my nautical activity. FSX - I am completely focused on what I am doing when I am practicing my nautical activity.	0.758 0.805 0.827 0.792 0.804 0.728	-	-	-	-	-
Nauture Relatdeness		**0.869**	**0.880**	**0.911**	**0.718**	
NRIV - I always think about how my actions affect the environment. NRV - My connection to nature and the environment is a part of my spirituality. NRVI - I feel very connected to all living things and the earth. NRVII - My relationship with nature is an important part of who I am.	0.793 0.856 0.864 0.875	-	-	-	-	-
Life Satisfaction		**0.774**	**0.814**	**0.866**	**0.684**	**0.104**
LSI - In most ways my life is close to my ideal. LSII - The conditions of my life are excellent. LSIII - I am satisfied with my life.	0.870 0.776 0.832	-	-	-	-	-

Note: C's A = Cronbach's Alpha; rho_A = reliability coefficient rho_A; CR = Composite reliability; AVE = Average variance extracted; Q² =1-SSE/SSO

Discriminant validity was assessed using the Fornell-Larcker criteria, showing compliance with the recommended values (Bagozzi et al., 1991). The HTMT matrix, based on correlations between constructs, demonstrated consistency and values within the 0.9 thresholds recommended by the literature (Henseler et al., 2015). Cross-loadings confirmed that each item's highest loading was on its respective construct (Chin, 1998), verifying that discriminant validity was achieved.

The second stage of the analysis involved validating the higher-order constructs, as recommended in the literature (Sarstedt et al., 2019). Recreational involvement was modeled with attractiveness, self-expression, and centrality dimensions. In contrast, subjective well-being was modeled with positive affect and life satisfaction dimensions. Table 2 below confirms the reliability and validity of these constructs (Cronbach's Alpha and Composite Reliability > .70 and AVE > .50):

Table 2 - Confirmatory Factor Analysis of the 2nd order measurement order

Itens	Standardized Load	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)	Q² (=1-SSE/SSO)
SWB		**0.728**	**0.767**	**0.878**	**0.783**	**0.102**
PA LS	0.851 0.918	-	-	-	-	-
RI		**0.866**	**0.866**	**0.918**	**0.788**	
SE AT CEN	0.901 0.885 0.877	-	-	-	-	-

Note: AT = Attraction; SE = Selfexpressiveness; CEN = Centrality; RI = Recreation involvement; NR = Nature relatedness; FS = Flow state; SWB = Subjective well-being; PA = Positive affect; LS = Life satisfaction.

Table 3 - Analysis of the discriminant validity of the 2nd order measurement model

	SWB	FS	RI	NR
SWB	**0.885**			
FS	0.401	**0.786**		
RI	0.362	0.739	**0.888**	
NR	0.322	0.491	0.489	**0.847**

Note: diagonal value represents the square root of the AVE of each factor. RI = Recreation involvement; NR = Nature relatedness; FS = Flow state; SWB = Subjective well-being

Regarding discriminant validity, the Fornell-Larcker criteria (Table 3) and the Heterotrait-Monotrait Ratio (HTMT) matrix were also applied, yielding favorable results.

Subsequently, the model's explanatory power was analyzed using SmartPLS 4 with bootstrapping. For this study, 5,000 samples were chosen. Hair et al. (2016) recommend that the number of bootstrap samples exceed the number of valid observations in the original dataset, making 5,000 samples an appropriate choice. To assess the model's explanatory power, R^2 was calculated. Cohen (1988) suggests interpreting R^2 as follows: ≥ 0.26 (strong), ≥ 0.13 (moderate), and ≥ 0.02 (weak). In this study, subjective well-being had an R^2 of 0.186, while flow state had an R^2 of 0.569. Effect size (f^2) was also measured.

The f^2 value estimates the extent to which an endogenous variable is affected when an exogenous variable is removed from the model. For this study, the flow state was significantly related to recreational involvement ($f^2 = 0.76$) and, to a lesser extent, to nature relatedness ($f^2 = 0.05$). Subjective well-being was also significantly related to flow state ($f^2 = 0.03$).

Finally, the Stone-Geisser Q^2 values were calculated to assess the magnitude of all R^2 values. All endogenous variables had Q^2 values above zero, indicating adequacy (Hair et al., 2016).

Hypothesis testing

After testing the model's hypotheses (Table 4), the following result was found:

Table 4 – Hypothesis testing

Hypothesis	Original Sample	Standard Deviation	T-test	P Value	
FS→SWB	0.251	0.115	2.190	0.029	Suported
RI → SWB	0.104	0.110	0.946	0.344	Not suported
RI → FS	0.656	0.066	10.009	0.000	Suported
NR → SWB	0.148	0.091	1.633	0.102	Not suported
NR → FS	0.170	0.073	2.313	0.021	Suported
RI→ FS→SWB	0.165	0.078	2.104	0.035	Suported
NR→ FS→SWB	0.043	0.028	1.532	0.126	Not suported

Note: RI = Recreation involvement; NR = Nature relatedness; FS = Flow state; SWB = Subjective well-being

The results did not support Hypothesis H1. Recreational involvement (β = 0.104, p = 0.344) among water sports practitioners was not related to their subjective well-being. Similarly, Hypothesis H2 was not supported, as nature relatedness (β = -0.148, p = 0.102) did not directly impact subjective well-being. However, Hypothesis H3 was supported, showing that flow state (β = 0.251, p = 0.029) significantly predicted subjective well-being.

For Hypothesis H4, recreational involvement positively and significantly influenced the flow state (β = 0.656, p < 0.000). Hypothesis H5 was also supported, indicating that nature relatedness positively predicted the flow state (β = 0.170, p = 0.021).

Finally, the mediating role of the flow state was tested. Flow state mediated the relationship between recreational involvement and subjective well-being (β = 0.165, p < 0.035), supporting H6a. However, it did not mediate the relationship between nature relatedness and subjective well-being (β = 0.043, p = 0.126), refuting H6b. Flow state, aligned with the literature on water sports tourism, was found to play a central role in achieving well-being, emphasizing its importance in these experiences (Jennings, 2007; Orams, 1999).

The results of this study reinforce a growing understanding in the literature that subjective well-being in tourism contexts is not merely the result of exposure to pleasurable elements such as nature or leisure activities, but of how individuals psychologically engage with these experiences. The central role of flow as a mediator suggests that well-being is significantly shaped by experiential depth and personal involvement — echoing the findings of Csikszentmihalyi (1990) and Houge Mackenzie & Hodge (2019). This invites a shift in tourism research and practice: from focusing solely on external conditions to fostering environments that enable immersion, challenge, and emotional alignment. In this sense, the study contributes by empirically validating that the path to well-being in nautical sports tourism is complex and nonlinear, requiring not only favorable conditions but also an internal state of absorption and perceived competence.

Discussion

Recreational involvement, in its most essential sense, equips the sporting nautical experience with centrality, self-expression, and appeal, enabling the individual to fuse with the proposed activity. This interaction challenges them to self-improvement, focus, and repetition of the activity, increasing the complexity of balancing skill and challenge (Jackson, 1992). It also leads to a profound sense of self-identification with the experience, creating an environment conducive to achieving the optimal experience, as demonstrated in H4.

The relationship with the natural environment also proved capable of predicting the flow state, as suggested by Boudreau et al. (2020) and H5 of this study. Coastal and marine environments can promote experiences of high absorption and loss of time awareness (Elliott et al., 2015; White et al., 2015), which can be challenging (Orams, 1999). When balanced with the practitioners' abilities, these environments can evoke a pleasant sense of control over the experience (Jennings, 2007), even if the natural surroundings may seem wild and unpredictable (Jones et al., 2000). For some tourists practicing water sports, their relationship with the natural environment creates a fusion between body, soul, and natural landscape, where feeling at one with the environment allows everything to flow, like a river. Thus, it can be affirmed that nautical sporting experiences can facilitate the flow state in tourists, and that flow state is essential for achieving well-being.

Despite the limitations imposed by the sample size and its convenience-based nature, the results offer relevant insights into how nautical sports tourism experiences contribute to subjective well-being. The finding that neither recreational involvement nor nature relatedness directly impacts well-being, but both influence the flow state, reinforces the importance of considering mediating psychological mechanisms in tourism research. This suggests that the emotional and cognitive immersion enabled by the flow state plays a more central role in well-being than the mere presence of favorable conditions. In line with previous studies (e.g., Cheng & Lu, 2015; Boudreau et al., 2020), the results point to the importance of designing tourism experiences that facilitate absorption, concentration, and challenge-skill balance.

The explanatory power was lower between the flow state and subjective well-being (H3), considered moderate (18.6%). This result prompts a reflection on the type of well-being promoted by the dimensions that make up the model. The flow state is considered a central element of eudaimonia (Huta & Waterman, 2014), while life satisfaction and positive affect, which compose the output variable, are considered more hedonic measures of well-being. Although the literature suggests an interrelation between hedonic and eudaimonic well-being, the context of sporting nautical activities may present strong characteristics such as challenges that demand significant effort, physical pain, and anxiety (imposed by the activity or the environment). Therefore, participants' well-being might be better explained by negative affects (not measured in this study) or by dimensions of eudaimonic well-being not considered here.

Practical implications

The findings highlight the importance of promoting experiences that stimulate the flow state in nautical tourism contexts. Instructors and guides play a central role in shaping these experiences, especially when they are able to propose challenges aligned with participants' abilities. This balance enhances the chances of reaching flow, thereby contributing to tourists' subjective well-being (Csikszentmihalyi, 1990; Hardy et al., 2023).

It is important to note that tourists engaging in nautical sports represent a heterogeneous audience, which may include both athletes with high levels of commitment and non-athletes seeking leisure and relaxation. These groups may differ in how they experience the activity, relate to the natural environment, and respond to flow-inducing situations (Jennings, 2007; Cavalheiro et al., 2021). Therefore, service providers and experience designers should consider customized approaches that accommodate different profiles. For instance, while athletes may seek technical challenges and performance, non-athletes may prioritize safety, emotional connection, and enjoyment.

Tangible elements of the service also influence flow. The use of appropriate and well-maintained equipment is essential, particularly for more experienced participants who are deeply engaged in the activity (Matsumoto et al., 2018). In contrast, newcomers and leisure-oriented participants may benefit from additional support, clear guidance, and environments that reduce perceived risk and foster confidence (Hardy et al., 2023).

Finally, facilities and infrastructure that enhance interaction with the natural surroundings can play a key role. Spaces that invite presence, reduce distractions, and allow individuals to focus on the experience may increase the likelihood of achieving flow, regardless of the participant's profile (Houge Mackenzie et al., 2011; White et al., 2015). As such, promoting flow through both human and material aspects of service delivery can contribute to more meaningful, satisfying, and well-being-oriented experiences in nautical tourism.

Theoretical implications

This study offers several theoretical contributions to the fields of tourism, leisure, and well-being. First, it empirically validates a conceptual model that integrates recreational involvement, nature relatedness, and flow state as predictors of subjective well-being in nautical sports tourism — a niche that remains underexplored in the literature (Cavalheiro et al., 2021; Jennings, 2007). The inclusion of flow as a mediating variable adds nuance to previous research by showing that the quality of psychological engagement is more decisive than the activity's characteristics alone (Cheng & Lu, 2015; Houge Mackenzie & Hodge, 2019).

Second, the study contributes by operationalizing the construct of nature relatedness within a tourism-sports context and testing its connection with flow — an interaction that had been previously suggested conceptually (Houge Mackenzie et al., 2011; Brymer et al., 2009), but not tested quantitatively in nautical settings. This opens a new path for investigating how natural environments function not only as scenic backdrops but as psychological catalysts of immersive experience.

Finally, by applying a higher-order reflective model and using validated scales in the context of Brazilian nautical tourism, the study contributes to the advancement of measurement models in tourism research. It encourages future studies to move beyond linear cause-effect relationships and incorporate mediated and dynamic processes when exploring how individuals experience well-being through leisure and nature-based travel.

CONCLUSION

This study aimed to identify and measure the factors influencing individuals' subjective well-being (athletes and practitioners) engaged in nautical activities during their travels. The constructs of recreational involvement, connection with nature, and flow state were defined to measure the levels of well-being in these tourists' travel experiences, ultimately presenting a model.

The hypotheses raised in this study contribute to understanding how tourists, increasingly engaged in their nautical activities, can achieve higher levels of well-being. The results confirm that the more involved a tourist is in the proposed activity during the sporting nautical tourism experience, the greater the chances of reaching the optimal experience state. Recreational involvement, characterized by dedication to leisure activities that generate satisfaction and engagement, is a factor that promotes positive experiences. However, the flow state, defined as a psychological experience of total immersion in an activity, enhances the effects of this variable on subjective well-being, mediating this relationship.

The relationship between these tourists and nature showed statistical significance for the flow state, indicating that immersion in the aquatic natural environment may be a gateway to reaching the peak experience or flow state. However, this relationship did not establish direct or indirect connections with the tourists' well-being. The deep identification of practitioners of these sports with the natural environment could, contrary to what was proposed in this study, inhibit tourists'

well-being when heightened awareness of the negative impacts of human actions on the natural environment (especially in more degraded areas) is considered. The natural environment can also seem unsafe or unpredictable for specific groups. Race and gender factors, not addressed in this study, should be considered in analyses of the use of natural environments and individuals' well-being, as well as the inclusion of negative affects in future measurements.

Moreover, the development of scales capable of capturing the cognitive nuances of the participant's relationship with nature (not present in the shortened version of the scale used in this study) and more specifically focused on tourism experiences in natural environments will significantly contribute to research on tourist well-being and its implications.

Among the limitations of this study, the need for specific respondents made it challenging to reach a sample that would allow for more robust analyses and prevent generalizations from being made. The recall-based responses from the sample, reflecting experiences remembered at different times, may have led to a loss of references and sensations related to the experience, influencing the results. Remote completion, while optimizing the survey application time, does not allow the researcher greater control over the questionnaire's completion.

Another limitation of this study lies in the heterogeneity of the sample, which included both athletes and non-athlete practitioners of nautical sports. Although both groups engage in similar activities, their motivations, levels of commitment, and relationships with the sport and natural environment may differ significantly. This may have influenced key variables such as recreational involvement, nature relatedness, and the flow experience. Future studies should consider segmenting these groups or focusing on one profile to better understand how these dynamics unfold in more homogeneous samples.

Nautical tourism presents a promising field for promoting well-being through meaningful and engaging experiences. This study highlights the importance of psychological immersion in shaping positive outcomes for tourists. Looking ahead, designing tourism experiences that foster presence, emotional connection, and personal resonance may represent a more mindful and fulfilling approach to nature-based and sports tourism in the years to come.

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