Leisure Constraints and Subjective Well-being: The Case of Recreational Sport Participants

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Figure 1

The Structural Model

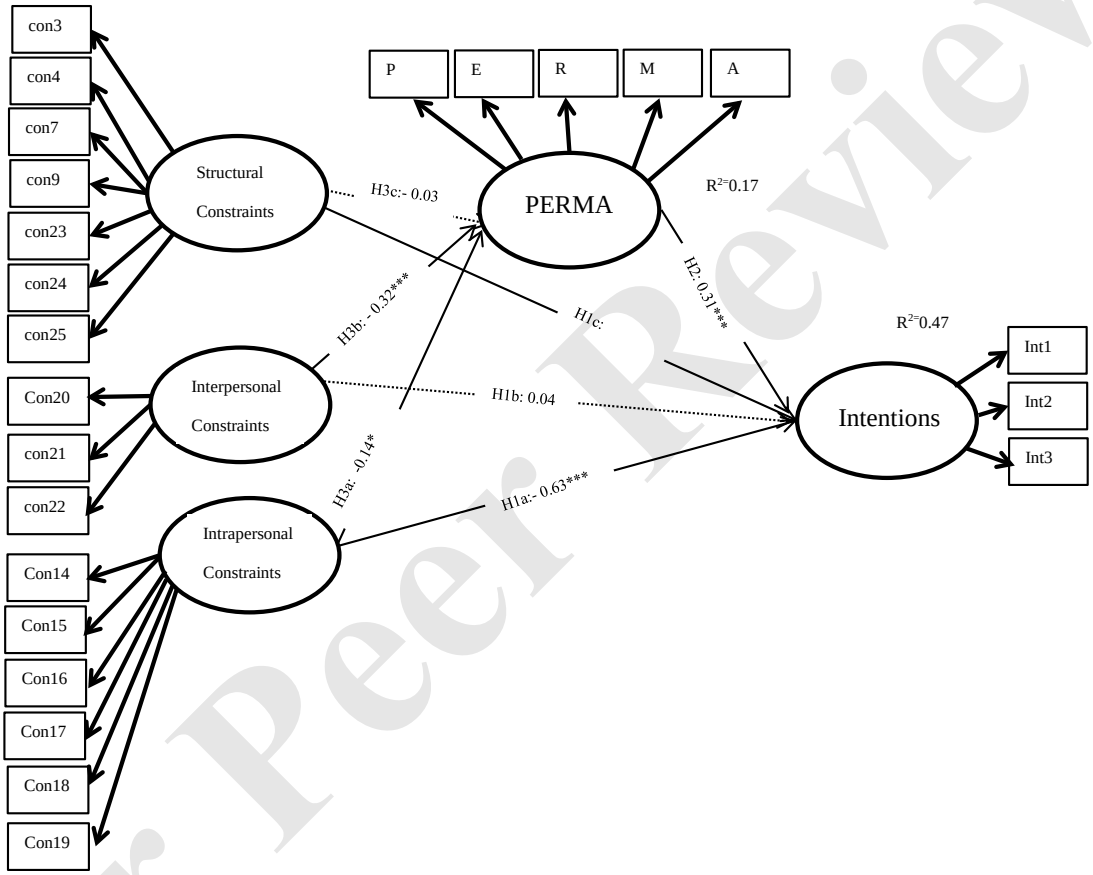

Table 1

Descriptive statistics and convergent validity statistics

Construct	Variable	M	SD	Skewness	Kurtosis	Std. Factor loadings	CR	AVE
PERMA	Positive emotions	6.42	1.59	-0.35	-0.76	0.88	0.93	0.73
(α =0.93)	Engagement	6.24	1.50	-0.33	-0.44	0.84		
	Relationships	6.62	1.81	-0.68	-0.43	0.86		
	Meaning	6.43	1.74	-0.52	-0.28	0.88		
	Accomplishment	6.40	1.42	-0.13	-0.39	0.82		
Structural constraints	Facilities: Poor Quality	3.65	1.81	0.05	-0.98	0.52	0.86	0.53
(α =0.89)	Facilities: Inadequate	3.72	1.77	0.02	-0.90	0.47		
	Facilities: Crowded	4.02	1.84	-0.16	-1.00	0.53		
	Cannot Afford	4.10	1.84	-0.10	-0.85	0.93		
	Expensive to exercise	3.93	1.85	-0.04	-0.93	0.90		
	Cost of Booking	3.94	1.96	-0.12	-1.15	0.86		
Interpersonal constraints	No friends to exercise	3.20	1.80	0.24	-1.10	0.95	0.92	0.79
(α =0.90)	Friends do not like exercising	3.10	1.74	0.21	-1.26	0.89		
	Friends are not interested	3.23	1.98	0.40	-1.09	0.82		
Intrapersonal constraints	Lack of time	3.83	1.84	-0.01	-0.99	0.51	0.84	0.43
(α =0.80)	Feel tired to exercise	3.71	1.94	0.01	-1.21	0.77		
	Health problems	3.80	2.16	0.16	-1.36	0.43		
	Do not feel confident	3.62	1.78	-0.07	-1.07	0.74		
	Do not like exercising	3.35	1.81	0.21	-0.91	0.59		
	More important things	3.56	1.84	0.12	-0.97	0.76		
	Exercise is not a priority	3.64	1.74	0.05	-0.75	0.70		
Intentions	Intentions 1	4.31	1.84	-0.16	-0.92	0.96	0.98	0.93
(α =0.98)	Intentions 2	4.36	1.86	-0.18	-0.97	0.98		
	Intentions 3	4.28	1.88	-0.22	-0.93	0.96		

Note. α= Cronbach's Alpha. CR= composite reliability. AVE = average variance extracted.

Table 2.

Discriminant validity test

	PERMA	Structural constraints	Interpersonal constraints	Intrapersonal constraints	Intentions	HTMT	PERMA	Structural constraints	Interpersonal constraints	Intrapersonal constraints	Intentions
PERMA	**0.85**					PERMA					
Structural constraints	-0.25	**0.73**				Structural constraints	-0.23				
Interpersonal constraints	-0.37	0.43	**0.89**			Interpersonal constraints	-0.37	0.40			
Intrapersonal constraints	-0.32	0.58	0.38	**0.66**		Intrapersonal constraints	-0.33	0.56	0.41		
Intentions	0.45	-0.24	-0.25	-0.57	**0.96**	Intentions	0.45	-0.22	-0.26	-0.59	

Note. 1. Numbers in bold on the diagonal represent the square root of AVE.

Table 3.

Standardized estimates of the paths in the proposed research model.

Hypotheses	Paths	Std. Estimates	Std. error	95%CI	
	Direct Effect			**Lower Bound**	**Upper Bound**
H1a	Intrapersonal constraints→Intentions	-0.63***	0.05	-0.73	-0.53
H1b	Interpersonal constraints→Intentions	0.04	0.05	-0.06	0.14
H1c	Structural constraints→Intentions	0.17***	0.05	0.07	0.28
H2	PERMA→Intentions	0.31***	0.04	0.23	0.38
H3a	Intrapersonal constraints→PERMA	-0.14*	0.06	-0.26	-0.02
H3b	Interpersonal constraints→PERMA	-0.32***	0.05	-0.42	-0.23
H3c	Structural constraints→PERMA	-0.03	0.06	-0.15	0.10
	Indirect Effect			**Lower Bound**	**Upper Bound**
H4a	Intrapersonal constraints→PERMA→Intentions	-0.04*	0.02	-0.09	-0.01
H4b	Interpersonal constraints→PERMA→Intentions	-0.10***	0.02	-0.15	-0.06
H4c	Structural constraints→PERMA→Intentions	-0.01	0.02	-0.05	0.03
	Variables	**R^2**			
	Subjective well-being	0.17			
	Intentions	0.47			

Leisure Constraints and Subjective Well-being: The Case of Recreational Sport Participants

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Leisure Constraints and Subjective Well-being: The Case of Recreational Sport Participants

This paper aimed to examine whether and how constraint dimensions interact with subjective well-being, measured in a holistic approach with the PERMA profiler, and in relation to recreational sport participation. The data were collected via an on-site survey, in a sample of five hundred Greek adult individuals (N=500). The results showed that intrapersonal constraints had the strongest negative influence on individuals' intentions to participate in sports. Furthermore, intrapersonal and interpersonal constraints negatively influenced intentions, through PERMA. While constraints had a direct negative impact on intentions, subjective well-being was shown to mitigate this effect. These results provide support and further extend the hierarchical model of leisure constraints, with the inclusion of a new variable – subjective well-being, as measured with a holistic approach (PERMA profiler). The policy implications of these results, related to sport participation promotion, are discussed.

Keywords: Leisure Constraints, PERMA, Recreational Sport Participation, Behavioral Intentions

Introduction

Leisure constraints research has been a popular topic in academic literature during the last thirty years, due to its theoretical and applied interest (Dale & Ritchie, 2020; Godbey et al., 2010, Ntovoli et al., 2024). From a theoretical perspective, introducing the hierarchical model of leisure constraints (Crawford et al., 1991) and the subsequent negotiation propositions (Jackson et al., 1993) helped researchers understand how individuals make decisions about sport, leisure, and recreation participation. From an applied perspective, leisure constraint research can be used by practitioners to develop strategies and introduce policies for removing constraints and increasing sport and physical activity participation (Alexandris et al., 2007; Jackson et al., 1993). It is well-documented today that physical inactivity presents a global and increasing problem (Alexandris et al., 2021; Alexandris et al., 2019). About 1.4 billion adults globally (i.e., 27.5% of the world's adult population) do not meet the recommended level of physical activity to improve and protect their physical and mental health, according to the World Health Organization (2022).

Well-being has been long considered a key construct for the creation of healthy, productive, and sustainable societies (Das et al., 2020). In a systematic review of the literature Das et al. (2020) identified seven broad categories of subjective well-being determinants/correlates: a) demographics, such as age, gender, and ethnicity, b) socio-economic status, such as income, education, and employment, c) health and functioning, such as self-reported health, obesity, and physical activity, d) personality traits, such as self-efficacy, optimism, and self-esteem, e) social support from family and friends, f) religion and culture, and g) geography and infrastructure, such neighborhoods, community aspects, and leisure. The same authors proposed that more research is required in one or more of the above determinant categories, especially in exploring inter-determinant relationships, such as age with physical decline, socialization, personal development, gender with self-efficacy, etc. Perceived

constraints were not explicitly discussed by Das et al. (2020) in any of the seven broad determinant/correlate categories. However, several determinants identified by Das et al. (2020), such as social support, perceived health, personality factors, religiosity, culture, and community aspects influence an individual's perceived or real leisure constraints. In line with these suggestions in the current study, we examined the construction of perceived constraints as a determinant of subjective well-being. A detailed review of the literature shows that there have been very limited attempts so far to examine whether and how constraints influence subjective well-being (Kim et al., 2010; Ma et al., 2012) in relation to recreational sport participation.

Based on the hierarchical model of leisure constraints, we argue that perceived constraint might influence subjective well-being, and this interaction might determine an individual's intentions to participate in recreational sports. In further developing the hierarchical model of leisure constraints, Jackson et al. (1993) proposed that all individuals face constraints, but some of them are successful in negotiating them. The same authors argued that several factors such as attitudes, perceptions, and motivation can act as moderators on the relationship between leisure preferences, constraints, and participation. Successful negotiation with the influence of one or more of these factors can lead to participation or at least to modified participation. Unsuccessful negotiation, on the other hand, will mean that constraints will block participation. There have been no attempts so far to study empirically the interaction among constraints, subjective well-being, and recreational sport participation. This is even though earlier studies proposed the negative relationship between constraints and life satisfaction, which is one of the elements of subjective well-being (Hawkins et al., 2004; Oh et al., 2001; Ragheb, 1989). Some evidence for this negative relationship was provided in the study of Ma et al. (2012) in which, however, life satisfaction acted as the mediator variable.

This study contributes to the literature by testing for the first time whether and how constraint dimensions interact with subjective well-being, measured in a more holistic approach, with the PERMA profiler, and in relation to recreational sport participation. The PERMA profiler was proposed by Seligman (2011) as a holistic conceptualization of perceived well-being, integrating both hedonic and eudemonic aspects, and including five pillars that contribute to an individual's well-being: positive emotions, engagement, positive relationships, meaning, and accomplishment. Furthermore, in line with the hierarchical model of leisure constraints, all three dimensions of constraints (i.e., intrapersonal, interpersonal, and structural) were measured and included in an integrated model, to establish whether the hierarchical proposition is supported with the inclusion of PERMA within it. Finally, this study examines for the first time if PERMA can mitigate the negative effects of certain types of constraints on intention to participate. Although the role of variables such as motivation (Alexandris et al., 2011, Ntovoli et al., 2024), personality (Lyu et al., 2013), and attitudes (Son & Yarnal, 2011) were examined in an individual's negotiation process for overcoming constraints, the possible buffering role of PERMA has not been tested so far. Following the above discussion, the purpose of the present study was to examine if PERMA acts as a mediator of the relationship between constraints and intentions for recreational sport participation.

Theoretical Background

Leisure Constraints

Jackson (1991, p. 279) defined constraints as "factors that are assumed by researchers and perceived or experienced by individuals to limit the formation of leisure preferences and to inhibit or prohibit participation in leisure activities". Crawford and Godbey (1987) classified constraints into structural, interpersonal, and intrapersonal. Within structural constraints, external and individual factors have been included, such as limited availability of free time,

limited provision of sport/leisure facilities and services, accessibility problems, and the cost of leisure participation (Alexandris et al., 2017). Interpersonal constraints result from an individual's social isolation and inability to find partners, such as friends, family members, and co-participants in individual and team leisure activities (Zou & Scott, 2018). Finally, intrapersonal constraints are perceived internally and include self-perceptions related to lack of abilities and skills, low self-image, low self-esteem, cultural constraints related to societal values and religiosity issues, as well as low priority for leisure participation (Alexandris et al., 2011; Alexandris et al., 2017). These three categories of constraints were placed within a hierarchical model of leisure decision-making by Crawford et al. (1991), based on the way that they influence leisure preferences and actual participation. These authors proposed that intrapersonal constraints are the most powerful ones on an individual's decision-making for leisure participation. They influence the preference for leisure participation and as such they are more likely to block it (Alexandris et al., 2011). Interpersonal constraints can influence both preferences and actual participation, while structural constraints are the most distant ones, and as such, they are the least powerful constraints (Alexandris et al., 2011; Crawford et al., 1991). The latter means that structural constraints can limit or modify participation rather than block it. However, there have been some studies that failed to establish a negative relationship between structural constraints and actual participation (Alexandris et al., 2002; Alexandris et al., 2022). These results were explained based on the negotiation proposition (Jackson et al., 1993), in which it was proposed that all individuals face and report constraints. However, some of them can overcome them and achieve leisure participation. So, the outcome of this negotiation process determines whether participation occurs in an activity and the frequency/intensity of participation. The negotiation proposition was empirically verified by several studies in sport, leisure, recreation, and tourism contexts (Alexandris et al., 2020; Bizen

& Ninomiya, 2022; Henderson et al., 1995; Jun & Kyle, 2012; Kono et al., 2021; Ma et al., 2012; Ma & Ma, 2014). Based on the above discussion the following hypothesis is developed:

Hypothesis 1

1a. Intrapersonal constraints have a negative relationship with intentions to participate in recreational sports.

1b. Interpersonal constraints have a negative relationship with intentions to participate in recreational sports.

1c. Structural constraints have a negative relationship with intentions to participate in recreational sports.

Subjective Well-being and the PERMA Profiler

Subjective well-being refers to "the degree to which people have positive appraisals and feelings about their lives, considered as a whole" (Fuhrer, 2000, p.483). It is an umbrella term that is used to describe the level of well-being that individuals experience based on their global assessment of their lives (Diener, 1984). This assessment is subjective (Diener, 1984), in contrast to measures of quality of life which are more objective (Funk et al., 2011; Kahneman & Krueger, 2006). Diener and Ryan (2009) noted that an individual's assessment of his/her subjective well-being can be both positive and negative.

Two main perspectives on well-being have been proposed in the literature: well-being as eudaimonia and well-being as hedonics (Huta & Waterman, 2014). Eudemonic well-being refers to the pursuit of achieving meaningful goals in an individual's life and it is referred to in the literature as psychological well-being. It is more of a normative construct, as it is based on an individual's or even on an external evaluation of possessing certain qualities in his/her life and living a desirable life (Das et al., 2020). On the other hand, hedonic well-being is more like

a subjective evaluation. It refers to the pursuit of pleasure and it is most often labeled as subjective well-being (Diener & Ryan, 2009; Miquelon & Vallerand, 2008; Ntovoli et al., 2025; Theodorou et al., 2024). According to Diener (1984), subjective well-being is perceived when an individual feels or thinks that his / her life is desirable, regardless of how others see it. In this line, it refers to "an individual's sense of his/her well-being" (Das et al., 2020, p. 2).

Seligman (2011) provided a more holistic conceptualization of well-being, with the proposition of the PERMA profiler. He argued that his model integrates both hedonic and eudemonic aspects, in contrast to the previous models which did not include both (Goodman et al., 2017). His model PERMA proposed five pillars that contribute to an individual's well-being: positive emotions, engagement, positive relationships, meaning, and accomplishment. Positive emotions are expressed when an individual feels happy in his/her everyday life (Butler & Kern, 2016). Positive emotions are particularly applicable in the context of sports since recreational sports create situations where fun and enjoyment are experienced by participants (Funk et al., 2022). Engagement refers to an individual's being connected, engaged, and feeling absorbed with his/her work or leisure activities and life in total. Individuals who are highly engaged in a leisure activity – intellectual, physical, or psychological – experience a mental state called 'flow', in which a person might experience a loss of self-consciousness and become completely absorbed with the activity (Boudreau et al., 2020). Positive relationships refer to feelings of being sociable, socially integrated, accepted, cared for, and supported by others (Brandel et al., 2017). Sport and recreation settings are among those that create social environments, promote social relationships, and contribute to the social well-being of sports participants' (Brajša-Žganec et al., 2011; Coleman & Iso-Ahola, 1993). Several studies have emphasized the social aspect of sport and recreation participation as a motive but also as an outcome of sport participation (Coghlan & Filo, 2013; Filo et al., 2008; Funk et al., 2011,). As previously defined, meaning belongs to the eudemonic dimension of well-being. It refers to

an individual's belief that his / her life is important, has a purpose, and has value for society. The dimension of meaning is particularly applicable in an individual's business life (Luthans & Youssef, 2004), but also in charitable sports events and settings (Doyle et al., 2016).

In the context of active recreation, research has shown that individuals might attach emotional, functional, and symbolic meanings to their sport activity (e.g., running) and/or program they participate in (e.g., CrossFit) (Funk et al., 2022). Finally, accomplishment refers to pursuing personal goals and having a sense of achievement (Ntovoli et al., 2025). It helps satisfy basic human needs such as competence, relatedness, and autonomy (Ryan & Deci, 2000). The accomplishment dimension is particularly applicable in the context of sport: research has shown that even recreational sport participants set personal goals (e.g., finish a marathon, improve my fitness level) and expect feedback and positive reinforcement for achieving these goals (Filo & Coghlan, 2016). The PERMA profiler has been recently used by several studies in different contexts, such as sports participation (Mirehie & Gibson, 2020a), sports fans (Doyle et al., 2016), sports events (Filo et al., 2022), education (Kern et al., 2015) and was found to be a valid framework for measuring individual well-being.

Subjective well-being is an important construct to study since research has shown that it is associated with positive behavioral (e.g., increased sports participation), psychological (e.g., happiness), and social (e.g., social life) outcomes (Lyubomirsky et al., 2005). These positive relationships have been reported across different groups of the population (Ntovoli et al., 2024), including adolescents (Staempfli 2007; Trainor et al., 2010), retirees (Kuo et al., 2007), students (Doerksen et al., 2014), and clinical populations (Ntovoli et al., 2025). Concerning exercise behavior, it has, however, to be noted that leisure participation has been seen as both a cause and an effect of subjective well-being (e.g., Iwasaki & Smale, 1998; Ma & Ma, 2014; Mirehie & Gibson, 2020b). Frey and Gullo (2021) in a longitudinal study

provided evidence for both causal directions. Similar results were reported by Kim et al. (2017) as well.

In a detailed review of the health and psychology literature, Boehm (2018) discussed how well-being can impact several behavioral processes. Concerning exercise behavior, he proposed that "often subjective well-being precedes the healthy behavior. For example, greater levels of subjective well-being are tied with more frequent exercise" (p. 662). Furthermore, Diener & Chan (2011) suggested that individuals with greater life satisfaction may also be more likely to engage in health behaviors, such as physical activity. Previous research has shown that positive emotions are associated with an increased desire for exercise participation and actual behavior (Catellier & Yang, 2013, Chen et al., 2018). Emotions are one of the dimensions of subjective well-being, and the PERMA model. It is therefore expected that higher levels of PERMA will be associated with a stronger intention to participate in recreational sports activities. The second hypothesis was therefore developed as follows:

Hypothesis 2

PERMA has a positive relationship with intentions to participate in recreational sports.

Considering the positive role of well-being on individuals' quality of life, the identification of factors that contribute to subjective well-being is an important task. It is well-documented that personality traits play a significant role (Costa & McCrae, 1980; Diener, 1996; Diener et al., 2003; Emmons & Diener, 1985; Karagiorgos et al., 2022; Lawton, 1994). Other factors that have been proposed include self-esteem (Lucas et al., 1996), employment issues (Diener et al., 2002; Lucas et al., 2004) free-time boredom (Lee & McCormick, 2004), and leisure-related variables (Hawkins et al., 2004; Nimrod, 2007; Ragheb, 1989).

Constraints have been proposed as one of the factors that influence an individual's life satisfaction (Hawkins et al., 2004; Kim et al., 2010; Ragheb, 1989; Samdahl and Jekubovich (1997). In 1989 Ragheb first reported a negative relationship between constraints and life satisfaction. This was confirmed later by Hawkins et al. (2004) and Oh et al. (2001). The authors of both studies proposed that leisure constraints are an important determinant of leisure satisfaction. Using qualitative research, Samdahl and Jekubovich (1997) reported that people who faced several constraints were experiencing dissatisfaction with their lives. In the context of leisure participation in households, Kim et al. (2010) proposed and empirically verified that leisure constraints negatively influence leisure satisfaction which in turn influences subjective well-being. However, in this model constraints were directly tested only against life satisfaction and not well-being. Furthermore, constraints were measured as a global construct and the influence of the three-constraint dimension on life satisfaction was not tested. Jackson et al. (1993) also suggested that intrapersonal constraints related to the lack of leisure interests are often a result of cognitive dissonance processes, in which people devalue an activity when participation in it seems unfeasible. These processes can have positive or negative impacts on well-being. Based on the above discussion, the third hypothesis was developed:

Hypotheses 3

3a. Intrapersonal constraints have a negative relationship with PERMA.

3b. Interpersonal constraints have a negative relationship with PERMA.

3c. Structural constraints have a negative relationship with PERMA.

The negotiation proposition was introduced to explain the non-significant or even positive relationships that were reported among dimensions of leisure constraints (mainly structural), and leisure participation (e.g. Carroll & Alexandris, 1997; Yamashita & Hallmann, 2021). The

identification of the factors that determine this successful negotiation of leisure constraints has been one of the key topics in leisure constraint research. Several factors that determine the success of the negotiation have been proposed and empirically tested, i.e., motivation (Alexandris et al., 2011), personality (Lyu et al., 2013), and leisure attitudes (Son & Yarnal, 2011). Based on Jackson et al.'s (1993) propositions and the scarcity of existing research (Kim et al., 2010), we argue that perceived well-being should be considered among the factors that interact with constraints and determine recreation participation. As previously noted, perceived well-being can be an antecedent and a consequence of leisure participation (Iwasaki & Smale, 1998; Ma & Ma, 2014; Mirehie & Gibson, 2020b). This leads to the fourth hypothesis:

Hypotheses 4.

4a PERMA acts as a mediator of the relationship between intrapersonal constraints and intentions to participate in recreational sports.

4b PERMA acts as a mediator of the relationship between interpersonal constraints and intentions to participate in recreational sports.

4c PERMA acts as a mediator of the relationship between structural constraints and intentions to participate in recreational sports.

In summary, the review of the literature on constraints and subjective well-being shows that no studies examined constraints on a detailed level of subjective well-being, i.e., using the dimensions proposed by Crawford et al. (1991) and the hierarchical model of leisure constraints. Furthermore, existing studies included life satisfaction as the dependent variable and not as a holistic model of subjective well-being (unlike PERMA, which covers all the five pillars that have been proposed in the literature).

Methodology

The data were collected via an on-site survey, which took place at a major business expo in the city of Thessaloniki, Greece. Visitors were approached and asked to voluntarily complete a questionnaire related to their recreational sport participation behavior. Self-reported measures of recreational sport participation were included in the questionnaire. Recreational sports were defined as sport and exercise activities that take place during leisure time (Alexandris & Carroll, 1997). A list of the sport activities (including walking for exercise purposes) was provided to help participants understand the context, based on previous studies (e.g. Alexandris & Carroll, 1997; Alexandris et al., 2002). The sample of this study consists of five hundred adult individuals (N=500). Consent was obtained from all individuals who participated in the study. The data were kept in a database accessed only by the principal investigator and the research associates of the study, adhering to the ethics process regulations.

The limitations of this sampling method should be addressed. The sample of the study was convenient. The specific expo was selected as a major event that the residents of the city visit, aiming for a large sample of the general population, representing different ages, and socio-demographic characteristics. However, since this site survey does not satisfy the criteria of drawing a random sample and due to the sampling error, the results cannot be considered representative of the population of the city (approx. one million inhabitants). This sample size however was judged to be satisfactory for achieving the statistical analysis required to test our measurement and structural models (Kline, 2015).

In terms of the sample profile, 56.6% were females, with an average age of 42.5 years old. In terms of education, the majority (35.8%) had secondary education, followed by the graduates (26%), and those with technical education (17.1%). In terms of sport participation, the results indicated that 73.6 % of the respondents were non-sport participants. These results are comparable with those reported by the latest Eurostat (2022), as noted in the introduction

section. From those who reported sport participation (26.4%), 21.2% participated daily, 37.9% participated 3-5 times a week, 29.5% participated 1-2 times per week and 11.4 percent participated less than once per week (11.4%). Regarding the type of sport activity, most of the participants reported walking for exercise purposes as the most popular one (57.6%), followed by running (31.1%) and strength training/ fitness (30.3%).

Leisure constraints were measured with Alexandris and Carroll's (1997) scale which has been successfully tested in Greek populations and has been widely published (e.g. Alexandris et al., 2011; Alexandris et al., 2022). Based on the hierarchical model of leisure constraints and in line with conceptualizations in previous studies (Alexandris et al., 2002; Alexandris et al., 2022; Casper et al., 2011), sixteen items in this scale are categorized into three dimensions, i.e., structural constraints (6 items), interpersonal constraints (3 items), and intrapersonal constraints (7 items). Well-being was measured with the PERMA profiler (Butler & Kern, 2016) including the five pillars, as discussed above: "positive emotions" (3 items), "engagement" (3 items), "positive relationships" (3 items), "meaning" (3 items) and "accomplishment" (3 items). This scale has been applied in several studies in sport settings and is reliable and valid (Filo et al., 2022; Mirehie & Gibson, 2020b; Oshimi & Kinoshita, 2022). The sum scores of these five pillars according to the conceptualization of PERMA were treated as the first-order factors. Finally, intentions to participate in recreational sports were measured with three items as have been typically used in several studies (Alexandris and Carroll, 1997; Alexandris et al., 2022; Alexandris et al., 2002).

Before the data analysis, the normality was examined by analyzing the skewness and kurtosis values of the items. All skewness and kurtosis were found to be between ± 2 and thus achieved normal distribution (see Table 1). Subsequently, A two-step approach was carried out to test the measurement and structural models (Hair, 2018). First, the measurement model was tested using confirmatory factor analysis (CFA) with the maximum likelihood method.

Multiple fit indices were used to evaluate the model fit, chi-square/degree of freedom ($\chi 2$/df), root mean square error of approximation (RMSEA), incremental fit index (IFI), comparable fit index (CFI), Tucker-Lewis Index (TLI), and Standardized Root Mean Squared Residual (SRMR) (Hu & Bentler, 1999). For an acceptable fit, a $\chi 2$/df value between 2 and 5, TLI, CFI, and IFI values above 0.90, an RMSEA value below 0.08, and an SRMR value below 0.08 are recommended. The measurement model was evaluated by examining item reliability, construct reliability, convergent validity, and discriminant validity. For item reliability, the standardized loading estimates should be higher than 0.50 and Cronbach's Alpha should be higher than 0.60 (Nunnally & Bernstein, 1994). Construct reliability was evaluated by composite reliability (CR), for which values of 0.70 or higher indicate good reliability (Hair et al., 2017). Convergent validity was assessed by the average variance extracted (AVE), with a threshold of 0.50 suggesting adequate convergence. Finally, discriminant validity was examined by both the Fornell and Larcker (1981) criterion and the Heterotrait-Monotrait (HTMT) ratio (Henseler et al., 2015). Second, structural equation modeling (SEM) was used to test the structural model. The overall model fit was assessed following the same criteria. A bootstrapping method was used to examine the mediation effects. Bias-corrected 95% confidence intervals and 5,000 bootstrap samples were used.

Since self-report data were used in this study, common method variance (CMV) was also tested by using several approaches that prior research suggested (Podsakoff et al., 2003; Richardson et al., 2009) and these approaches have also been applied in previous research (e.g. Agarwal et al., 2015; Goldberg et al., 2016; O'Cass & Sok, 2014). Firstly, the initial component explained 31.59% of the variance, below the recommended 50% suggested for Harman's one-factor test. Similarly, a CFA with all items loaded onto a single construct resulted in a considerable drop in the model fit compared to the original model ($\Delta\chi 2 = 2881.2$, df= 10, $p < 0.01$). Finally, as recommended by Lindell and Whitney (2001), the effects of CMV were

estimated in a post hoc approach by calculating the impact of the factor with the smallest positive correlation with others (r=0.38). All significant hypothesized relationships were found to remain significant after controlling for CMV. Therefore, the above analyses support that common method variance bias is not a threat in this study.

Results

Measurement Model

The Cronbach's alpha scores of all the subscales were above the recommended score of 0.60 (Nunnally & Bernstein, 1994). All the AVE and CR values of all dimensions, except the intrapersonal one (AVE=0.43), were higher than the recommended scores of 0.5 and 0.7, respectively. Although the AVE value of the intrapersonal dimension is below the 0.5 threshold, it can still be considered acceptable since its CR value was higher than 0.6 (0.84) (Fornell & Larcker, 1981). All squared correlations between constructions were lower than their AVE values. Since the statistical method to compare AVE and squared correlation has limitations when the two constructs are theoretically correlated (Voorhees et al., 2016), we also checked and confirmed that all Heterotrait-Monotrait values were lower than 0.85 (Henseler et al., 2015). This process indicated acceptable discriminant validity. The CFA results showed an acceptable fit ($\chi 2$ /df = 944.17/218 = 4.33, $p < .001$; RMSEA = 0.08; TLI= 0.91; CFI = 0.93; IFI =0.93; SRMR= 0.07). Thus, the reliability and validity of the constructs were established (see Table 1 and Table 2).

[Table 1 near here]

[Table 2 near here]

Structural Model

The structural model was tested after ensuring that the measurement model was valid and acceptable. The results of structural model ($\chi 2$ /df = 1068.96/233= 4.59, p <.001; RMSEA = 0.08; TLI= 0.92; CFI = 0.90; IFI =0.92; SRMR= 0.07) showed an acceptable fit. The significance of the estimated regression coefficients was examined to test the proposed theoretical framework and the hypotheses. Table 3 presents the structural paths, standardized estimates, standard errors, probabilities, the coefficient of determination (R^2), and the bootstrapping test of the indirect effects. According to the results, hypotheses H1a (β= -0.63, p <.001), H2 (β=0.31, p<.001), H3a (β=-0.14, p<.05), H3b (β= -0.32, p <.001) were successfully confirmed, while H1b (β=0.04, p>.05), H1c (β=0.17, p<.001) and H3c (β=-0.03, p>.05) were rejected.

The mediating role of well-being in the relationship between constraints and intentions was further tested. The results revealed a significant indirect effect of intrapersonal constraints on intentions (H4a) (β=-0.04; p<.05; 95%CI= [-0.09, -0.01]) and interpersonal constraints on intentions (H4b) (β=-0.10; p<.001; 95%CI= [-0.15, -0.06]), which indicated mediation effects. However, there was no mediation effect of structural constraints on intentions (H4c) (β=-0.01; p>.05; 95%CI= [-0.05, 0.03]). Hence, PERMA partially mediated the relationship between intrapersonal constraints with intentions and fully mediated the relationship between interpersonal constraints and intentions (Figure 1).

[Table 3 near here]

[Figure 1 near here]

Discussion

This paper aimed to test the interaction among leisure constraints (intrapersonal, interpersonal, and structural), subjective well-being measured by the PERMA profiler, and intentions to

participate in recreational sports, using as a framework the hierarchical model of leisure constraints (Crawford et al., 1991). As noted earlier, all these three variables have not been incorporated in an integrated model in previous research. The results of the study, first, provided support for the hierarchical model of leisure constraints and its propositions. Intrapersonal constraints were shown to have the strongest negative influence on individuals' intentions to participate in recreational sports. Similar findings have been reported in previous studies in the context of sports and leisure (Alexandris et al., 2022; Kim et al., 2015; Ntovoli et al., 2024). The positive relationship between structural constraints and intentions was not an unexpected finding; positive or non-significant relationships between structural constraints and intentions to participate have been reported in previous studies (e.g. Alexandris et al., 2022; Ntovoli et al., 2024). Such results can be explained by the hierarchical model of leisure constraint and the negotiation proposition (Jackson et al., 1993). It has been proposed that structural constraints do not necessarily block participation, they might modify it. Subsequently, there might be individuals who report structural constraints but somehow overcome them, and subsequently, these individuals express positive behavioral intentions. This can be the reason for the presence of a positive relationship. On the other hand, those who report intrapersonal constraints (which influence the preference for participation) might feel 'blocked' and express limited intentions for participation.

While previous studies reported variables such as motivation and personality to intervene between constraints and intentions for participation (Alexandris et al., 2011; Ntovoli et al., 2024; Son & Yarnal, 2011), in the present study we followed a different approach. We introduced the PERMA profiler, with its five facets, and tested its interactions with leisure constraints and intentions. This holistic approach to measuring well-being has not been adopted by previous studies while testing the relationship between well-being, leisure constraints, and intentions. The results provided support for our hypotheses that leisure constraints

(intrapersonal and interpersonal) act as negative antecedents of PERMA. Previous studies have also reported a negative relationship between constraints and life satisfaction (Hawkins et al., 2004; Kim et al., 2010; Ragheb, 1989; Samdahl & Jekubovich, 1997). Our more detailed analysis provided further evidence that intrapersonal and interpersonal constraints are those that relate to PERMA. Positioning these findings mostly by interpersonal constraints, while the facets of positive emotions, meaning, and accomplishment might be influenced by intrapersonal constraints. Individuals who face intrapersonal constraints are more likely to have a lower level of well-being. As previously discussed, these constraints relate to individual psychological traits and self-perceptions about limited skills and abilities, low self-image and self-esteem, but also several internal constraints related to cultural and societal values. The experience of these constraints suppresses individuals' desire to adopt a more active lifestyle (Alexandris et al., 2022), creates a demotivating environment (Alexandris et al., 2002), and brings lower levels of PERMA (Ntovoli et al., 2025). In a similar line, interpersonal constraints relate to social isolation and the inability to find partners to participate with. Considering the social nature of sports and the motivating role of significant others in individuals' desire to adopt an active lifestyle (Cho et al., 2020), it can be argued that these constraints inhibit individuals from having an enjoyable life. They do not allow them to feel engaged in their leisure, develop positive social relationships and a meaningful life, as well as accomplishing their personal goals. Structural constraints were not shown to influence subjective well-being. These results subsequently support and further expand the hierarchical model of leisure constraints. They propose that the intrapersonal and interpersonal constraints interact not only with motivation and personality but also with subjective well-being, which is an individual perception of dimensions of life satisfaction. In contrast, structural constraints, while they are reported by individuals, do not have a significant effect on individuals' leisure behavior and well-being.

As previously discussed, subjective well-being is an important construct since it is associated with several positive physical, social, and psychological outcomes such as life satisfaction, social integration, psychological health, and increased leisure time (Lyubomirsky et al., 2005). A holistic approach to well-being, as it was developed in the PERMA profiler, proposes that positive emotions, engagement, positive relationships, meaning, and accomplishment are the five facets of the construct that conceptualize it (Butler & Kern, 2016; Seligman, 2011). Importantly, the results of the study supported the construct validity of this model in the context of recreational sports, as has been reported in other contexts, such as sports fans (Doyle et al., 2016), sports events (Filo et al., 2022), and education (Kern et al., 2015).

Our study also supported previous findings that well-being can be an outcome but also a cause of increased levels of active leisure and recreation participation (Iwasaki & Smale, 1998; Ma & Ma, 2014; Mirehie & Gibson, 2020b). Individuals with higher PERMA levels report positive emotions and adopt a more positive approach toward their perceived physical and psychological health. This brings increased motivation to adopt an active lifestyle through sport and exercise participation (Chen et al., 2018). Previous studies have also shown the important role of effect on individuals' intentions to exercise (Mohiyeddini et al., 2009). Catellier and Yang (2013), for example, reported that feeling happy is one of the antecedents of individuals' desire to adopt a more active lifestyle.

In this study, we hypothesized that PERMA mediated the relationship between constraints and intentions, as one of the constructs that might determine the successful negotiation of leisure constraints. The results indicated that PERMA acts as a mediating variable that buffers the adverse effects of intrapersonal and interpersonal constraints. When individuals report higher levels of subjective well-being, they may perceive intrapersonal and interpersonal constraints as less obstructive, possibly due to a more positive outlook and higher resilience. Despite the existence of constraints, this can lead to stronger intentions to engage in

the desired behavior. Therefore, PERMA can be seen as a moderating force that transforms the potential negative impact of constraints into a less detrimental or neutral effect on intentions. This is a significant finding considering that previous studies have reported that intrapersonal constraints have the strongest negative influence on individuals' decision to start taking part in sports (Alexandris et al., 2002). Once again, these results might explain the weak relationships between constraints and intentions and/or actual leisure behavior, as reported in previous studies (e.g. Alexandris et al., 2002; Alexandris et al., 2011). They also align with the broader psychological literature (Das et al., 2020; Diener, 1984, Kuykendall et al., 2018), which posits that individuals with higher subjective well-being are better equipped to cope with challenges and are more likely to maintain or regain their equilibrium in adversity. Positioning these findings with the leisure negotiation proposition (Jackson et al., 1993), it can be argued that positive emotions and feeling happy can be important antecedents for the successful negotiation of intrapersonal constraints, which are experienced internally by an individual and block their desire to participate in recreational sports. However, since our study did not specifically involve measures of individual negotiation strategies, this is an issue that needs further research.

These results have policy implications. Interventions that target psychological well-being may be important not only in enhancing psychological health but also in helping individuals become more resilient, successfully negotiating their intrapersonal and interpersonal constraints, and increasing their desire to adopt an active lifestyle. This in turn will improve their physical health (Kim et al., 2017). Several interventions have been proposed to target psychological well-being. Ryff (2014) proposed the key components of self-acceptance, purpose in life, autonomy, positive social relationships, environmental mastery, feeling capable, and personal growth. Recreation providers must create recreational environments in a way that fosters these components and helps individuals to successfully

negotiate their intrapersonal and interpersonal constraints. Examples can be promoting the connection through participating in group sport activities, enhancing individuals' enjoyment and intrinsic through participating in fun and enjoyment activities, considering the free activity choice of the leisure concept, and providing opportunities for self-development as well as mastering the sport activity environment through setting and achieving realistic goals.

However, the analysis of the data in the present study did not go to such a detail level. The impact of the three dimensions of leisure constraints on the individual facets of PERMA was not tested. Concerning the negotiation proposition (Jackson et al., 1993), our results propose that subjective well-being might be one of the factors that determine the successful negotiation of leisure constraints. Individuals who perceive themselves as having good well-being are more likely to negotiate constraints, overcome them, and reach participation. Further analysis and discussion could also involve a deeper dive into the specific aspects of subjective well-being that contribute to this mitigating effect, such as emotional stability, life satisfaction, and optimism.

Additionally, examining the potential buffering role of subjective well-being could shed light on intervention and negotiation strategies (Jackson et al., 1993) that aim to enhance perceived well-being to promote positive engagement in various activities, despite existing constraints.

In conclusion, this study for the first time provided evidence that intrapersonal and interpersonal constraints negatively influence intentions through PERMA. This suggests that while constraints have a direct negative impact on intentions, the presence of subjective well-being can mitigate this effect. In line with the hierarchical model of leisure constraints, structural constraints were not shown to have significant negative relationships with PERMA and intentions to participate.

Limitations and Future Research

In the present study, subjective well-being was measured through a holistic approach, using the PERMA model in a cross-sectional study. It must be first addressed that, despite the use of SEM, establishing causal relationships in cross-sectional designs is limited, especially when intention is used as the dependent variable. Causal relationships among constraints, well-being, and recreation behavior should be tested with longitudinal studies in future research. Sport involvement, as a dependent variable, is one of the constructions that can be very useful in understanding recreational sports behavior, especially when examined within the framework of the Psychological Continuum Model (Funk et al., 2022; Funk et al., 2011), and in relation to PERMA.

As previously noted, our results showed positive relationships between structural constraints and intentions to participate, which is a finding that has been also reported in previous studies (e.g. Alexandris et al., 2002, Alexandris et al., 2011). However, it was not possible to test how specific types/dimensions of structural constraints influence intentions to participate, and if there are any differences in the direction of these relationships. This is an area for future research. In the same line, we did not explore the specific coping mechanisms that individuals employ to overcome these constraints.

While this study used the hierarchical model of leisure constraints as the theoretical base, the negotiation proposition was not specifically tested. Negotiation strategies (e.g. behavioral, and cognitive) were not measured or incorporated within the model. Future research can investigate this further and negotiation strategies can be tested on individual well-being and recreational behavior. A final note relates to the context of the study and the nature of the sample. This study used a recreational sport as the context. Future studies could test this model in other leisure, recreation, and event tourism contexts to capture the contextual aspects of leisure constraints and behavior.

A final note should be made about the directions of the variables that have been included in the model. In the current study, we defined recreational behavior as an outcome and not a cause of PERMA. There have been several studies, however, which proposed that well-being is an outcome of sport participation (McAuley & Morris, 2007). Testing such an alternative model could also help understand the interactions among constraints, PERMA, and recreation behavior.

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