

**Title:** The interrelationship between personality traits and psychological constraints on adventure activity participation

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## **The interrelationship between personality traits and psychological constraints on adventure activity participation**

### **Abstract**

The popularity of adventure activities in leisure and tourism is escalating, yet little is known about how personality and perceived constraints can prevent consumption of such activities. The aim of this study was to test a model of the mediating role of psychological constraints in explaining the relationship between personality and interest in adventure activity participation. Based on a questionnaire survey of 1324 respondents, a quantitative analysis using structural equation modelling (SEM) was carried out. The results show that personality does influence psychological constraints, which in turn have a significant negative effect on adventure activity participation. Increased knowledge about the constraints to adventure activity participation can contribute to realizing the full development potential that lies in adventure consumption in leisure and tourism. Implications of the research can prove valuable in both leisure and tourism marketing and management.

**Key words:** leisure participation, leisure constraints, SEM, adventure activities, nature-based recreation.

## **INTRODUCTION**

The growth in adventure activities and increased consumer participation in adventure tourism activities are evident (Puchan, 2004). Moreover, the use of adventure activities in marketing campaigns is greater than before. The concept of “adventure” is prominent in the marketing of tourism destinations (e.g. Queenstown in New Zealand) and countries (e.g. Canada and Norway), but also in the marketing of products such as clothing (e.g. brands such as Bergans and Norrøna) and energy drinks (Red Bull). The representation of people as adventure seekers has become commonplace. Due to the increased attention to adventure activity (Pomfret & Bramwell, 2014), the potential for the development of experiences based on such activities has aroused increasing interest (Cheng, Edwards, Darcy, & Redfern, 2016). Since participation in adventurous activities often requires great effort and commitment, participation might not appeal to, or be attainable by everyone. Nevertheless, as adventure sports are “opening up to the less than ‘extreme’ person and to anyone looking for a different way to keep fit and enjoy the great outdoors” (Puchan, 2004, p. 173), it is essential to cater to the needs of these consumers as it represents a great business opportunity.

Those involved in the marketing of adventure activities may consider both participants and non-participants as target groups. However, no matter the participation rate in such activities, some people might experience constraints that hinder or limit participation. Recognizing these constraints is important to gain knowledge of both non-active and active consumers, which represents an area of consumer research in need of additional studies (Hudson & Gilbert, 2000). Even when one acknowledges the similarities between outdoor adventure recreationists and tourists in general, there is still a need for more work on the characteristics and motivational decisions of outdoor adventure recreationists (Pomfret & Bramwell, 2014). The

current study attempts to fill this gap, as it aims to gain insights into the constraints affecting adventure activity participation. Moreover, this study emphasizes the constraints to participation in physically demanding outdoor adventure activities such as downhill biking, mountain biking, backcountry skiing, paragliding, parachuting and BASE jumping. The aim of this article is to propose and test a model of how personality and psychological constraints affect interest in participation in these adventure activities. The study addresses the following research question: How does personality and psychological constraints affect the interest in participating in adventure activities?

Whereas much research on consumer constraints has mainly focused on structural and interpersonal constraints, the present study employs a more psychological perspective, placing the dimension of psychological constraints at the center of the model (see Figure 1). Although it draws on the leisure constraints theory of Crawford and Godbey (Crawford & Godbey, 1987; Crawford, Jackson, & Godbey, 1991), the current study differs from previous research in that it delves more deeply into the psychological aspects of constraints and includes personality as a variable in the model. With its reflection on the individual consumer, this study contrasts with that of Crawford and Godbey (1987), who focus on the family unit, as well as with studies of students' constraints (Adam, Hiamey, & Afenyo, 2015; Mirsafian, 2016). It also differs from previous studies with a place-bound context connected to tourists' and visitors' constraints regarding a place (Pennington-Gray & Kerstetter, 2002; Thapa, 2012; Thapa, Pennington-Gray, & Holland, 2002) in focusing on the interest in adventure activities themselves rather than the place or setting.

Although there is a great body of research “demonstrating the strong influence of personality on leisure activity choice” (Barnett, 2006), there is a gap in the literature connecting the three concepts of personality, constraints and adventure activity consumption. This study attempts to fill this gap in presenting a model of psychological constraints as a mediating variable that influences the relationship between personality and activity participation, while controlling for the interpersonal and structural constraints. Knowledge of such an interrelationship would provide insight into the factors influencing participation in adventure activities. This could add to the understanding of the consumer, as well as it could provide managerial implications that can contribute in marketing of such experiences.

## LITERATURE REVIEW AND HYPOTHESES

### *Constraints in leisure and tourism*

Constraints research is rooted in psychology and leisure research and the number of empirical studies has increased since its introduction in the 80s (Jackson, 2000). Leisure constraints research has also gained its share in tourism consumption (Nyaupane, Morais, & Graefe, 2004; Smith, 1987; Thapa, 2012; Thapa et al., 2002), as leisure activities and tourism consumption are closely intertwined (Pomfret & Bramwell, 2014). Consumer behavior is also one of the most commonly studied areas in tourism research (Cohen, Prayag, & Moital, 2014), providing a close connection between tourism and consumer research.

An early conceptualization of consumer barriers to participation in leisure activities identified intrinsic, environmental and interactive barriers as constraints on the opportunity of disabled tourists to participate in leisure activities (Smith, 1987). Later constraints research into leisure

and tourism consumption, however, (Mirsafian, 2016; Pennington-Gray & Kerstetter, 2002; Thapa, 2012) is largely based on the hierarchical leisure constraints theory introduced by Crawford and Godbey (Crawford & Godbey, 1987; Crawford et al., 1991; Godbey, Crawford, & Shen, 2010). This theory presents human constraints as consisting mainly of intrapersonal, interpersonal, and structural constraints (Crawford et al., 1991; Godbey et al., 2010).

Intrapersonal, interpersonal and structural constraints are hierarchical and commonly acknowledged as the three main types of constraints to leisure (Jackson, 2000). According to Crawford et al. (1991), constraints are first experienced at the intrapersonal level.

Intrapersonal constraints involve individual psychological states and attributes such as stress, depression, anxiety, perceived self-skill and prior socialization into specific leisure activities (Hudson & Gilbert, 2000; Pennington-Gray & Kerstetter, 2002). These constraints “interact with leisure preferences rather than intervening between preferences and participation” (Crawford & Godbey, 1987, p. 122). Furthermore, the intrapersonal barriers can be changeable by nature and can be modified over time, as well as being experienced at an individual psychological level, e.g. motivation for leisure and locus of control (Crawford & Godbey, 1987). Interestingly, it is also known that the experience will be perceived more positively, and self-mastery will be greater, if one has overcome intrapersonal constraints rather than not having perceived them at all (Fendt & Wilson, 2012). This goes to show that psychological constraints are central in what one might experience as barriers when considering participation in an activity.

Constraints can also be perceived at an interpersonal level, occurring “as a result of interaction or the relationship between individuals’ characteristics” (Crawford & Godbey,

1987, p. 123), e.g. the lack of a partner to participate with (Crawford & Godbey, 1987). These barriers are applicable to interpersonal relations in general and can thus be used in studying constraints to adventure activity participation. On the final hierarchical level, people can also experience structural constraints, the factors that intervene between what one prefers and actual participation, e.g. family life cycle, season, opportunity and cost (Hudson & Gilbert, 2000; Pennington-Gray & Kerstetter, 2002). To date, structural constraints have been studied most often (Jackson, 2000). Structural constraints can be divided into two different groups, personal structural constraints and environmental structural constraints (Thapa et al., 2002). Personal structural constraints are internally derived and are connected to the individual, e.g. fear of crime or poor health (op. cit.). Environmental structural constraints, on the other hand, are externally derived and are associated with the setting, such as lack of information, poor weather and crowding issues (Thapa et al., 2002). Whereas interpersonal and structural challenges can be considered more as barriers that can be overcome, intrapersonal constraints are experiences in one's "inner self" at a psychological level. It is therefore reasonable to assume that intrapersonal constraints cannot as easily be overcome, because this requires a change in one's mindset, involving the ability to see past the perceived psychological constraints.

A fourth constraints dimension was introduced by Chen, Chen and Okumus (2013) when studying the impact of tourism consumption constraints upon destination image, namely unfamiliar cultural constraints which occur in peoples' image of a foreign destination. Chen et al. (2013, p. 198) found that the four travel constraints dimensions all impact young travelers' "formation of destination image during the early decision-making process". Furthermore, cultural values and norms can affect perceived constraints, and cultural values and tradition

affect students' constraints towards participation in sports and physical activity (Mirsafian, 2016). This was especially pertinent amongst Iranian female students, whereas Hungarian students in particular experienced structural constraints related to financial issues at university (op. cit.). In the current study, however, this fourth cultural constraints dimension (Chen et al., 2013) is not included, as the study addresses consumers' participation in adventure activities and does not involve the international aspect of travel. Moreover, the present study does not bring in the cross-cultural aspect of comparing different nationalities, but rather focuses on generalized constraints for participation.

Empirical studies of the effects of constraints have revealed how constraints relate to other variables. Raymore, Godbey and Crawford (1994, p. 99) addressed the relationship between self-esteem and perception of constraints, and found that "self-esteem was negatively related to the perception of intrapersonal, interpersonal and total constraints on leisure". Testing the constraints model in a tourism consumption setting (but unrelated to adventure activities), Thapa et al. (2002) identified no interpersonal constraints, but recognized both intrapersonal and structural constraints, for visitors to Florida (Thapa et al., 2002). Other research has acknowledged that among the perceived constraints (intrapersonal, interpersonal and structural) to nature-based travel, the most important were money and time, whereas the least important was the influence of friends (Pennington-Gray & Kerstetter, 2002).

Constraints to participation in (non-adventure) outdoor activities show that amongst Korean University students "the higher the interpersonal constraints, the lower the frequency of outdoor activity participation" (Oh, Oh, & Caldwell, 2002, p. 183). Thapa (2012) studied structural constraints to visiting a Zambian national park, identifying the differences between

domestic and international tourists, recognizing clear differences between the two groups, which partly referred to cultural values or unfamiliar cultural constraints (Chen et al., 2013; Mirsafian, 2016). Furthermore, testing the constraints model as outlined by Crawford et al. (1991) in a nature-based tourism setting, Pennington-Gray and Kerstetter (2002) revealed that individual perceptions of constraints differed depending on sociodemographic characteristics. Younger people and those with children perceived more structural constraints, whereas no difference was detected between men and women (op. cit.).

Taking a female specific approach to adventure tourism activities constraints, Fendt and Wilson (2012) found that female surfers were most often hindered by personal constraints such as “the unknown” and the challenge of being a female surfer, which is still considered a minority in surfing culture. Female surfers also experienced sociocultural constraints (e.g. encountering localism and lack of travel companions) as well as practical constraints such as managing logistics and limited finances. Whereas many studies have focused on constraints as something negative, Fendt and Wilson (2012) found that female surfers actually valued moving past constraints and felt that this enhanced their surfing experience, even more than if no constraints were present. When a person has to struggle to overcome a mental or physical challenge within reach, eudaimonic feelings occur with a sense of psychological well-being (Moen & Vittersø, 2015; Ryan & Deci, 2001).

The studies of adventure activities in consumer research have particularly revolved around extraordinary experiences (Tumbat & Belk, 2011), the risk aspect (Celsi, Rose, & Leigh, 1993; Weber, Blais, & Betz, 2002), and concepts such as flow and happiness (Bhattacharjee & Mogilner, 2014; Csíkszentmihályi & Rathunde, 1993). Moreover, the iconic work of

Arnould and Price (Arnould, 2007; Arnould & Price, 1993) on extraordinary experiences has been central in the literature on adventure activity consumers. Nevertheless, studies particularly directed at constraints related to consumer behavior in outdoor adventure activities are scarce, with some notable exceptions. Hudson and Gilbert (2000, p. 69) identified significant differences in constraints between skiers and non-skiers; whereas non-skiers were constrained by several intrapersonal constraints, “skiers were constrained by time, family and economic factors”. The non-skiers experienced many intrapersonal constraints, such as thinking skiing is harder to learn than other sports, and thinking of skiing as highly competitive, fashion focused and risky. These results highlight aspects marketers could take into account to aid constraints negotiation and increase participation. The study of skiers did not find support for the hierarchical aspect of the constraints model (Hudson & Gilbert, 2000), thus suggesting that “interpersonal constraints often do not exist in skiing” (Hinch, Jackson, Hudson, & Walker, 2005, p. 157) as people move directly from intrapersonal to structural constraints, and therefore do not necessarily encounter interpersonal constraints (Hinch, et al. 2005). In a study of soft adventure activities, constraints such as safety concerns and doubt of physical ability were identified amongst Chinese students (Gardiner & Kwek, 2016), proving similar to those of the non-skiers (Hudson & Gilbert, 2000).

Constraints towards an adventurous outdoor activity may also partly be connected to the setting (Thapa et al., 2002). The constraints one perceives can be directly related to the activity in question but constraints can also arise when people consider the setting in which the activity takes place (e.g. mountains, skiing slopes, rivers). For participation in adventurous activities both factors are presumably relevant, as the activities are often viewed as too challenging and as taking place in an insecure or unfamiliar setting (Gardiner & Kwek, 2016).

Moreover, the results of experiencing constraints are not synonymous with non-participation; rather, a person's ability and motivation to negotiate constraints will decide the outcome (McGuiggan, 2003), hence the negotiation of constraints should be acknowledged (Hinch et al., 2005). The negotiation thesis proposes that people find ways to enjoy and participate in leisure, in spite of experiencing constraints (Hinch et al., 2005). Constraints do not necessarily preclude participation in leisure; people negotiate constraints and therefore they are part of shaping the leisure realization (Jackson, 2000). The experience and participation "might differ from what they would have been in the absence of constraints" (Hinch et al., 2005, p. 149). Nevertheless, relatively little is known empirically about the negotiation of leisure constraints (Jackson, 2000), with a notable exception claiming "constraints negatively influenced outdoor recreation participation and positively affected negotiation" (White, 2008, p. 356). Furthermore, White (2008) suggests that negotiation did not significantly affect participation, but that motivation was the most important predictor of participation and had a positive effect on negotiation.

As application of the constraints theory has grown, so has the critique. One point of criticism is the over-emphasis on structural constraints, although structural constraints are less common in recreational activities than in a tourism setting (Thapa, 2012). Moreover, constraints research has been accused of "a narrow choice of criterion variables, over-emphasizing participation vs. non-participation", neglect of negotiation strategies, and "over-reliance on quantitative methods" (Jackson, 2000, p. 65). Godbey et al. (2010) confronted and countered the critique, concluded that the theory still holds and validated the usefulness and appropriateness of the constructs of intrapersonal, interpersonal and structural constraints as the principal components of the theory (op. cit.). Hence, despite this critique, the model of

leisure constraints has remained at the fore of constraints research. It also applies to other types of behavior, it is cross culturally applicable and there is potential in expanding the theory to advance constraints research (Godbey et al., 2010).

### *Personality*

Previous studies connecting personality to leisure behavior anticipated that leisure participants are “likely to choose activities that convey images closely related to their true or desired selves” and highlighted the “importance of personal identity as distinctive factors that affect behavior” (Dimanche & Samdahl, 1994, p. 126). Schneider and Vogt (2012) found that personality affects adventure travel behavior as the personality traits of need for arousal, agreeableness, competitiveness, altruism, need for learning, interest in cultural experiences and need for uniqueness proved to be associated with adventure travel propensity.

Nevertheless, there is a need for more research into leisure constraints and their relationship to social and psychological factors (Alexandris, Tsorbatzoudis, & Grouios, 2002). Constraints research in leisure can benefit from applying psychological theory, studying how personality might affect activity constraints. Furthermore, personality might affect the ability to negotiate constraints (McGuiggan, 2003) and, depending on the constraints encountered, personality constructs may influence consumer choice and behavior. Personality arguably has an intervening effect on the management of constraints or constraints negotiation (Alexandris et al., 2002; Beggs & Elkins, 2010; Beggs, Stitt, & Elkins, 2004). Moreover, Alexandris et al. (2002) examined “the influence of constraints dimensions on intrinsic motivation, extrinsic motivation and amotivation”. The results showed that intrapersonal constraints are demotivating for individuals, whereas structural and interpersonal constraints showed no relationship to motivation (Alexandris et al., 2002). Motivation has also been connected to

participation in the adventure activity of surfing in that constraints are less powerful the higher the motivation for participation (Fendt & Wilson, 2012), proving the connection between personality and participation.

Personality as a psychological construct is indeed pertinent in experiential consumption (Mehmetoglu, 2012). The experiential aspect of adventure activities is clear, as these activities allow for the involvement of all aspects of the experience realm (Pine & Gilmore, 2011). Furthermore, adventure activities require involvement, skills and performance (Cheng et al., 2016; Pomfret, 2006) and to experience a “rush” has lately been identified as key (Buckley, 2012). The thrill is the active participation by the consumer in naturalistic activity (Arnould, 2007) which leads to the feelings of sensation and flow (Csíkszentmihályi, 1990; Csíkszentmihályi & Rathunde, 1993) that are often sought in these experiences. The most extreme of adventure sports is BASE jumping and in a study of the personality characteristics of BASE jumpers, Monasterio, Mulder, Frampton and Mei-Dan (2012) found no clearly defined personality type, but rather a variety of temperament and character traits associated with participation in BASE jumping. An interesting result was that BASE jumpers did score significantly low on harm avoidance (Monasterio et al., 2012). Studying the personality effects on experiential consumption of a variety of activities, including adventurous activities, Mehmetoglu (2012) revealed that the trait of openness was associated with most experiential activity preferences. Moreover, the preference for typical adventure activities was strongly negatively related to the personality trait of neuroticism (Mehmetoglu, 2012). Neuroticism is thus a relevant personality trait to bring in as a measurement variable.

Neuroticism is one of the five main personality traits from the “big five model”, which also includes the traits of extraversion, agreeableness, conscientiousness and openness to experience (Gosling, Rentfrow, & Swann Jr., 2003). Drawing upon the big five model of these five broad personality traits, Mehmetoglu (2012) identified neuroticism to be the one trait that had an influence on participation in all experiential activities. Although there are some inconsistencies in results, neuroticism is commonly held as an established dimension of personality (Barnett, 2006). In light of earlier studies (Barnett, 2006; Dimanche & Samdahl, 1994; Schneider & Vogt, 2012), there is also reason to believe that people low on neuroticism are likely to choose leisure activities that express their interest in challenge and play (e.g. downhill skiing and parachuting). Moreover, research (McGuiggan, 2003) suggests that neuroticism is a personality trait that will influence the perception of intrapersonal constraints. Drawing upon this knowledge, it is reasonable to assume that neuroticism as a continuous personality variable is linked to a person’s experience of psychological constraints to adventure activity consumption.

### *Hypotheses*

Based on the above literature review, the following hypotheses can be put forward in terms of how personality and constraints relate to adventure activity consumption:

H1 Personality has an effect on psychological constraints

H2 Psychological constraints have an effect on adventure activity participation

H3 Psychological constraints mediate the relationship between personality and adventure activity participation

The constraints theory (Crawford & Godbey, 1987; Crawford et al., 1991) and its reevaluation (Godbey et al., 2010) served as inspiration in establishing the conceptual framework of the current study. Whereas previous literature on constraints has maintained a focus on structural constraints (Hudson & Gilbert 2000, p.72), this study takes a different approach. Expanding upon the original model, this study looks into how personality might influence adventure activity participation via perceived psychological constraints, controlling for the influence of interpersonal and structural constraints. The goal is to obtain increased knowledge about the constraints for participating in adventure activities and their relation to personality. Moreover, the study includes both participators and non-participators in adventure activities to address the importance of both users and non-users (Beggs et al., 2004) as potential tourists.

Thus, to test the hypotheses of perceived psychological constraints serving as mediators of the relationship between personality and the interest for participation in adventure activities, Figure 1 was developed and tested.

--- Insert figure 1 near here ---

## **METHODS**

### *Data and sample*

The authors designed a questionnaire containing questions about interest in adventure activity participation, constraints hindering adventure activity participation, personality traits and demographics. A small group of respondents pre-tested the questionnaire, enabling the authors to adjust and optimize the quality of the questionnaire. It was then sent to a professional data

collection company in Norway which had access to a randomly selected panel of 70 000 Norwegians, from which they drew a sample of 1324 individuals. However, the sample should still be considered a convenience sample. The respondents answered the roughly 12-minute-long questionnaire online. The response rate was 26 per cent. The sample consisted of 52 percent male and 48 percent female respondents. There was also a nearly equal share (25 percent) of people from the following four age groups: under 30 years, 30-39 years, 40-49 years, and 50-99 years.

### *Measures*

In this study, the PERSONALITY scale was represented by one of the widely known “big five” dimensions, namely neuroticism. Neuroticism was measured using three items (e.g. ‘I worry a lot’) obtained from a personality-related study conducted by Mehmetoglu (2012) with a Norwegian sample. The respondents were asked to indicate to what extent they agreed with each of three statements as a description of themselves on a six-point scale (1 = completely disagree, 6 = completely agree) (see Table 1). It should already at this point be mentioned that some of the items from each of these measures were left out later in the analysis section. The main reason was that the authors wanted to establish a measurement model (with convergent and discriminant validity) that was satisfactory before estimating the structural model.

The PSYCHOLOGICAL CONSTRAINTS scale was operationalized using one of the three dimensions (e.g. intrapersonal constraints) of the leisure constraint model proposed by Crawford and Godbey (1987). The other two dimensions of the leisure constraint model were interpersonal and structural constraints. These three dimensions were represented by a total of

19 items (e.g. 'It is physically demanding', 'I have no-one to participate with', 'I do not have time', etc.), originating from previous studies (Pennington-Grey & Kerstetter, 2002; Crawford & Godbey, 1987; Crawford et.al. 1991; Godbey et al., 2010; Adam et al, 2015). The respondents were asked to indicate to what degree these were constraints hindering their participation in extreme sport/experience activities in their leisure time in general. Here too, a six-point scale (1 = not at all; 6 = to a great degree) was used.

ACTIVITY PARTICIPATION items concerned interest in participating in 14 different adventure activities (e.g. surfing, paragliding, speed riding and climbing). Here, the respondents were asked to indicate to what degree they could imagine participating in each of these activities on a scale ranging from 1 (not at all) to 6 (to a great degree). In the final model, six of these activities were included in the two variables EUDARIDE (mountain biking, downhill biking and backcountry skiing/freeriding) and EUDAFLY (paragliding, parachuting and BASE jumping). Grouping these activities and assigning the variable labels were inspired by research on psychological eudaimonic orientation (Vittersø, Søholt, Hetland, Thoresen & Røysamb, 2009; Moen & Vittersø, 2015; Ryan & Deci, 2001).

## **FINDINGS AND DISCUSSIONS**

The research model depicted in Figure 1 was tested within the structural equation modelling (SEM) framework. The two-stage approach to testing a full SEM model suggested by Anderson and Gerbing (1988) was pursued in the study in that a confirmatory factor analysis (CFA) was first used to test the measurement part and subsequently a full SEM analysis was used to test

the structural part. Both the measurement and full SEM model were tested using the maximum likelihood method of estimation in Stata software.

### *Measurement model*

As the structural model requires a psychometrically sound measurement model (Byrne, 2012), one should examine the convergent and discriminant validity of the latent variables of the model [i.e. construct validity] (Anderson & Gerbing, 1988). Convergent validity exists when the manifest variables of a specific latent variable converge or share a high proportion of variance (Hair, Black, Babin, Anderson, & Tatham, 2006). As shown in Table 1, one measure for convergent validity, namely the standardized factor loadings of the manifest variables reflecting the four latent variables, showed that they were all above the suggested threshold of 0.4 (Mehmetoglu & Jakobsen, 2017) and statistically significant. Another measure, the amount of variance in the manifest variables captured by each of the latent variables, is represented by AVE (average variance extracted) values. The AVE values were all quite close to or above the recommended level of 0.5. A further measure for convergent validity is construct or composite reliability, measuring the internal consistency of the manifest variables. The construct reliability (CR) coefficient used here was Raykov's factor rho coefficient (see Kline, 2011, p. 242), formulated specifically in the context of a CFA model, as opposed to Cronbach's alpha coefficient. CR coefficients for the four latent variables were above the desirable level of 0.60 (Bagozzi & Yi, 1988). These acceptable values confirm the convergent validity of the latent variables.

--- insert table 1 near here ---

Another desirable psychometric characteristic of a good measurement model is that the latent variables exhibit discriminant validity. Discriminant validity is the extent to which a latent variable is truly distinct from other latent variables (Hair et al., 2006). Discriminant validity is demonstrated when the shared variance between the latent variable and its manifest variables [AVE] is larger than the latent variable's shared variance with the other latent variables [squared correlations] (Hulland, 1999). As observed in Table 2, all the AVE values are larger than the squared correlations between the latent variables, confirming accordingly the discriminant validity of the latent variables in the measurement model.

--- insert table 2 near here ---

In addition to the evidence of construct validity, measurement model validity depends on goodness-of-fit (GoF) for the measurement model (Hair et al., 2006). GoF reflects the discrepancy between  $\Sigma$  (predicted variance-covariance matrix) and  $S$  (sample variance-covariance matrix) (see Brown, 2006). The smaller this discrepancy, the better the fit of the measurement model (or the structural model for that matter). The SRMR fit index was 0.060, RMSEA was 0.071, CFI was 0.913 and TLI was 0.891. Based on these figures, one may conclude that the model fits the data well. Due to this result and the demonstrated construct validity, the authors suggest that the study's measurement model was sound, which is a necessary condition for testing and assessing the structural model.

### *Structural model*

The first criterion for evaluating the validity of the structural model is assessing the model fit, as was done for the measurement model. The fit indices for the structural model (SRMR=0.090, RMSEA=0.081, CFI=0.884 and TLI=0.858) were also nearly acceptable. More importantly, the second criterion for evaluating the structural model is similar to that used in traditional multiple regression analysis in that the authors examined the statistical significance and direction of individual estimates for the paths given, as well as the proportion of the explained variance of the endogenous variables in the model.

--- insert table 3 near here ---

As can be observed in Table 3, NEUROTICISM has a significant effect on INTRAPERSONAL CONSTRAINT ( $\beta=0.380$ ,  $SE=0.030$ ,  $R\text{-squared}=0.14$ ). This means that the more one is neurotic, the more psychological constraint one feels hinders one's participation in extreme sport activities or experiences. This finding then lends support to H1 of the study. Furthermore, one can also see that INTRAPERSONAL CONSTRAINT has a significant effect (negative) on both EUDARIDE ( $\beta=-0.523$ ,  $SE=0.030$ ) and EUDAFLY ( $\beta=-0.597$ ,  $SE=0.027$ ). That is, the more psychological constraint one feels hinders one's participation in extreme sport activities or experiences, the less one can imagine participating in hard adventure activities such as e.g. downhill biking, parachuting or base jumping. This result provides evidence for H2 of the study. Incidentally, 32 and 37 percent of the variation in EUDARIDE and EUDAFLY respectively were explained by the model.

Finally, for the mediational hypothesis (H3), the authors examined the indirect effects. The results show that NEUROTICISM has a significant indirect effect (negative) on both EUDARIDE ( $\beta=-0.198$ ,  $SE=0.019$ ) and EUDAFLY ( $\beta=-0.226$ ,  $SE=0.020$ ). Having further followed the steps (see the Appendix) described by Kenny (2016), the authors discovered that while INTRAPERSONAL CONSTRAINT completely mediated the relationship between NEUROTICISM and EUDARIDE, it only partially mediated the relationship between NEUROTICISM and EUDAFLY. These findings support the third hypothesis (H3) of the study.

## **CONCLUSION**

This study suggested a model of the interrelationship between personality and psychological constraints to adventure activity participation. The model was tested within the structural equation modeling (SEM) framework. The three hypotheses are supported: personality has an effect on psychological constraints (H1), psychological constraints have an effect on adventure activity participation (H2) and psychological constraints mediate the relationship between personality and adventure activity participation (H3).

Intrapersonal constraints are psychological (Hudson & Gilbert, 2000); being rooted within a person (Crawford & Godbey, 1987), moreover, personality has a direct effect on activity participation but also affects participation via the mediating variable psychological constraints. This suggests that personality will affect one's inclination to perform adventure activities in one's leisure time via the felt constraints. Although constraints research has been criticized for being quantitatively focused (Jackson, 2000), the current study contributes in

shedding light on the interrelationship between personality, constraints and adventure activity participation. As a response to the tendency to emphasize structural constraints (Hudson & Gilbert, 2000) as overly important, this study emphasizes personality and psychological constraints and thereby adds to the knowledge of the potential participants in adventure activities. Such knowledge of the personality of potential consumers of adventure activities is useful for the creators and marketers of adventure activities. It would allow them to develop experiences and address the marketing of those experiences in different ways, depending on the segment's personality orientation (i.e. more or less neurotic).

In contrast to previous research on adventure activity participation which has studied one adventure activity in depth (Hudson & Gilbert, 2000), this study includes a variety of adventure activities, consequently broadening the scope. The chosen adventure activities may be regarded as a combination of hard and soft adventure activities. BASE jumping stands out as the most extreme (Monasterio et al., 2012), whereas mountain and downhill biking, backcountry skiing/freeriding could be considered “softer adventure” as they are easier to adapt to the participants' skill level. Faced with choices of adventure activity participation, consumers experience psychological constraints influenced by their personality. This study shows that the personality trait of neuroticism will negatively affect the likelihood of participating in hard adventure activities. This proves that personality is an important variable in consumer behavior, thereby suggesting that it is key to know how psychological constraints influences the decisions of whether to participate in an activity or not. Companies could thus benefit from “softening” the activities in their representations, if their target is to attract a larger “mainstream market” to a certain destination. To overcome challenges or to negotiate constraints is nevertheless a part of leisure behavior (Hinch et al., 2005; Jackson, 2000) and

thus does not necessarily prevent participation. This means that it would not necessarily be a goal for managers to diminish the level of challenge as it represents a factor that enhances the experience.

Studying adventure activity constraints increases knowledge of what keeps people from participation and what limits people's adventure activity consumption. In turn, such knowledge can be beneficial to tourism businesses offering adventure activities, and to marketing executives who uses adventure activities as an important element in their marketing campaigns. Awareness of consumers' constraints makes it possible to develop marketing campaigns specifically aimed at lessening the experienced constraints towards adventure activity participation. Moreover, constraints awareness can be beneficial in considering starting up a new adventure activity business, as it provides valuable knowledge about potential clients. Businesses working in the field could use the results to reduce perceived constraints, by trying to influence consumers' perceptions through marketing efforts or packaging. Tourism companies or leisure events that experience a decline in participation could benefit from identifying the constraints, to better target their experience offerings, information and marketing campaigns. Knowledge of consumer constraints provides the possibility to clarify doubts or misconceptions that the tourists might have about adventure activities, thus contributing to constraints reduction and increased participation.

The results of this study shows that psychological constraints do affect willingness to participate in adventure activities. However, personality influences psychological constraints and one should take into account that these constraints are experienced at an individual level. Thus if the aim is to reduce perceived constraints, and enabling participation, detailed

information about the activity and the setting where it takes place might assist individuals in their ability to negotiate the psychological constraints. The need for information regarding e.g. the safety issues of adventure activities, as well as which safety measures are taken by any company that offers them, would be vital to enable participation amongst a broader tourist segment. It might enable the “non-consumers” to renegotiate their view of adventure activities, reducing e.g. the level of perceived risk (Russel & Prideaux, 2014). Insight into the barriers that might prevent adventure consumption can thus be valuable in choosing direction in marketing campaigns and in selection of target segments.

There are some limitations of this research. First, the article tests a model of the connection between personality and constraints to adventure activities participation, but does not look into negotiation of constraints. This is not to disregard this aspect of consumer constraints; rather, it lends support to research that calls for a more thorough study of negotiation of constraints (McGuiggan, 2003). Secondly, while the personality construct was measured using one of the “big five” dimensions, it could be useful to broaden the scope by including other personality dimensions. A third limitation of the study may well be that it does not distinguish between participants and non-participants. This could be a downside, as peoples’ prior knowledge of the different activities could affect the perceived constraints. As the skills and knowledge of the consumer can influence the perceived constraints, a person unfamiliar with the activity of downhill biking might perceive stronger psychological constraints to this activity, because of unfamiliarity with e.g. the option of participation at a beginners’ level in easy trails, thereby thinking the activity is difficult and too risky. A fourth limitation could be that the sample obtained is a convenience sample.

The current study substantiates the relationship between personality, psychological constraints and adventure activity participation. Future research directions could potentially look into negotiation of constraints on initial participation, or the influence of compromise on the experience. This would enable a more in-depth knowledge of how consumers deal with the barriers they feel and how they in turn could overcome them by negotiation strategies, both before and during participation in the experience. From a tourism point of view, the knowledge of how compromise affects participation could provide useful knowledge of tourist behavior. Moreover, studies including more nationalities or comparing respondents with different cultural backgrounds, could further inform on the area of study, revealing differences between consumers of e.g. collectivistic and individualistic cultures.

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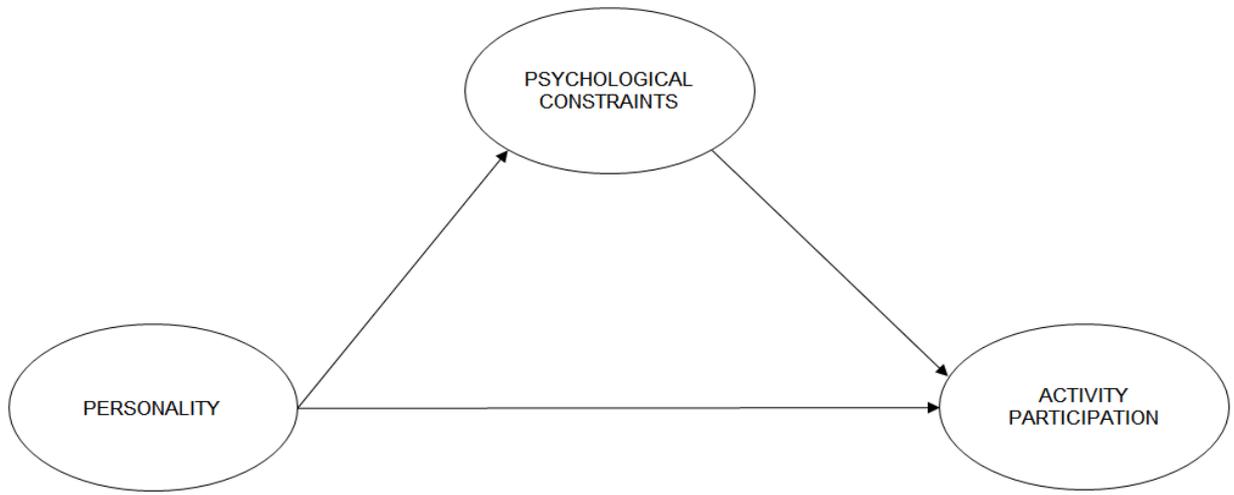


Figure 1: The study model

Table 1. Psychometrics of the measurement model

<b>LATENT CONSTRUCT</b> Manifest variables	$\lambda$	<b>CR</b>	<b>AVE</b>
<b>NEUROTICISM</b> q3_10 I can be tense q3_11 I worry a lot q3_12 I easily get nervous	0.791 0.798 0.777	0.832	0.622
<b>INTRAPERSONAL</b> q2_1 It is physically demanding q2_5 There is a high (physical) risk involved q2_6 I am scared of getting injured q2_7 I lack the skills/abilities	0.600 0.835 0.851 0.593	0.822	0.534
<b>INTERPERSONAL</b> q2_8 I have no-one to participate with q2_9 Lack of interest amongst my family q2_10 Lack of interest amongst my friends/colleagues	0.624 0.613 0.759	0.701	0.447
<b>STRUCTURAL</b> q2_15 I do not have time q2_17 It demands far too much planning q2_18 I am too busy doing other things	0.798 0.481 0.830	0.766	0.519
<b>EUDARIDE</b> q1_1 Mountain biking q1_2 Downhill biking q1_3 Backcountry skiing/freeriding	0.726 0.839 0.750	0.808	0.598
<b>EUDAFLY</b> q1_9 Paragliding q1_10 Parachuting q1_11 Base jumping	0.865 0.860 0.751	0.874	0.684

$\lambda$ =Standardized coefficients; CR=Construct reliability; AVE=Average variance extracted.

Table 2. AVE of and squared correlations between the latent constructs

	Neuroticism	Intrapersonal	Interpersonal	Structural	Eudaride	Eudaflly
Neuroticism	1					
Intrapersonal	0.138	1				
Interpersonal	0.030	0.089	1			
Structural	0.004	0.029	0.220	1		
Eudaride	0.017	0.163	0.009	0.011	1	
Eudaflly	0.010	0.228	0.003	0.001	0.411	1
<b>AVE</b>	<b>0.622</b>	<b>0.534</b>	<b>0.447</b>	<b>0.519</b>	<b>0.598</b>	<b>0.684</b>

Table 3. Results of the structural model

		Dependent variables					
		INTRAPERSONAL CONSTRAINT		EUDARIDE		EUDAFLY	
		$\beta$	SE	$\beta$	SE	$\beta$	SE
<b>Independent variables</b>	NEUROTICISM	0.380***	0.030	0.039	0.036	0.087***	0.033
	INTRAPERSONAL CONSTRAINT			-0.523***	0.030	-0.597***	0.027
	<i>i</i> NEUROTICISM via INTRAPERSONAL CONSTRAINT			-0.198***	0.019	-0.226***	0.020
	<b>Controls</b>						
	INTERPERSONAL CONSTRAINT			0.234***	0.043	0.234***	0.041
	STRUCTURAL CONSTRAINT			0.072	0.040	0.009	0.038
	R-squared		0.14		0.32		0.37

\*\*\* significant at 0.01.

*i* represents the indirect effects.

APPENDIX

Significance testing of indirect effect (standardised)

<b>Estimates</b>	<b>Delta</b>	<b>Sobel</b>	<b>Monte Carlo</b>
Indirect effect	-0.198	-0.198	-0.199
Std. Err.	0.021	0.019	0.018
z-value	-9.613	-10.308	-10.754
p-value	0.000	0.000	0.000
Conf. Interval	-0.239 , -0.158	-0.236 , -0.161	-0.237 , -0.164

Baron and Kenny approach to testing mediation

STEP 1 - Intrapersonal:Neuroticism (X -> M) with B=0.380 and p=0.000

STEP 2 - Eudaride:Intrapersonal (M -> Y) with B=-0.523 and p=0.000

STEP 3 - Eudaride:Neuroticism (X -> Y) with B=0.039 and p=0.274

As STEP 1, STEP 2 and the Sobel's test above are significant  
and STEP 3 is not significant the mediation is complete!

Note: to read more about this package [help medsem](#)