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*Original*

*Availability:*

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*Publisher:*

*Published*

DOI:10.1016/j.ausmj.2018.09.003

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*This is the peer reviewed version of the following article:*

*Scarpi, D., Pizzi, G., Raggiotto, F., & Mason, M. (2018). A qualitative comparative analysis (QCA) of satisfaction toward extreme sporting Events. Australasian Marketing Journal (AMJ), 26(4), 358-368., which has been published in final form at*

<https://www.sciencedirect.com/science/article/abs/pii/S1441358218301745>

# **A QUALITATIVE COMPARATIVE ANALYSIS (QCA) OF SATISFACTION TOWARD EXTREME SPORTING EVENTS**

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# **A QUALITATIVE COMPARATIVE ANALYSIS (QCA) OF SATISFACTION TOWARD EXTREME SPORTING EVENTS**

## **1. Introduction**

Extreme sports consist of activities demanding extraordinary physical and mental challenges from participants, which usually involve great risks. Extreme sports are for instance: BMX, skydiving, snowboarding, cliff jumping, ice jumping (Brymer and Houge Mackenzie, 2016) and triathlon (Atkinson, 2008). The popularity of extreme sports is growing by two-digits figures (Xtremesports, 2008; Team USA, 2016), and in some cases popularity has become so high that the extreme discipline has even been included in the Olympic games (e.g., BMX, since 2008).

For the extreme sport industry, the main source of revenues are extreme sporting events, as -unlike traditional sports- the majority of revenue comes from active consumer participation (athletes) rather than from passive participation (i.e., spectators), and rotates around the major events (NerdWallet, 2015; ISPO, 2016; Nielsen Scarborough, 2017). The popularity and marketing potential of such events is widely acknowledged by practitioners and academics, and the marketing and advertising investments of the brands organizing extreme sporting events have recently experienced a dramatic increase. Event management practitioners have attempted to harness the marketing potential of extreme sporting events by developing unique offerings and structuring unique events.

Recent calls for research invited investigation into the drivers of satisfaction toward an event when individual physical performance actively contributes to consumer experience of the event (Du et al., 2015). However, despite the long-standing, consistent attention paid by researchers to sporting event satisfaction (e.g. Brown et al., 2016; Du et al., 2015), previous studies have mostly considered passive participation (e.g., Ko et al., 2011; Lee, Kim, Ko, & Sagas, 2011). Furthermore, previous studies have mostly focused on traditional sporting events (e.g., football; Richelieu & Pons, 2006), while significantly less attention has been paid to active participation in extreme sports, probably because they have only recently experienced an

exponential growth. Instead, the present analysis investigates satisfaction toward extreme sporting events, and the unit of analysis is extreme sport participants, rather than spectators.

In doing so, we consider some key specificities of extreme athletes according to the literature in psychology. According to previous studies in psychology, extreme sports are also different from traditional sports with regards to the kind of individuals that practice them (Lyng, 1990), whose behavioral drivers are different from those of traditional athletes (Laurendeau, 2006). Extreme sport participants actively seek the sensation that originates from risks (Milovanovic, 2005), thus engaging in exhausting, even potentially lethal ordeals with the aim of constantly pushing forward their physical and psychological limits in order to seek strong sensations (Brymer & Houge-Mackenzie, 2016), to which they attribute a cathartic significance (Laurendeau 2006).

Previous studies have suggested that due to the intrinsic psychological characteristics of extreme sports, marketing related variables might work differently in this context (Puchan, 2005; Self, Henry, Findley, & Reilly, 2007). However, no study has so far empirically verified this assumption by using the psychological characteristics of “extreme” individuals’ as predictors of their satisfaction toward a sporting event.

Moreover, the extant literature helps identify various predictors of satisfaction toward a sport event, while previous studies have concentrated on the ‘net effects’ of these antecedents. However, “relationships between variables can be non-linear, with abrupt switches occurring, so the same ‘cause’ can, in specific circumstances, produce different effects” (Urry, 2005, p. 4), so that the effects of the predictors of satisfaction could be more intertwined than they might seem at a first glance. Thus, accounting for this potentially higher complexity can help provide a more accurate understanding of what drives customer satisfaction. Accordingly, instead of analyzing in isolation the main effects of specific predictors, the present research aims at investigating all the possible configurations (i.e., combinations of antecedents) that could lead to customer satisfaction in a sporting context. In line with this theorizing, we investigate how an extreme sporting event can achieve high levels of customer satisfaction under different configurations of the participants’ perceived control over the event, sensation-seeking tendency, attitude toward the event, event image and trust in the event/brand. Specifically, the following question is put forth: What configurations of perceived control, sensation-seeking, attitude, event image and trust lead to high customer satisfaction? In order to address this research question, qualitative

comparative analysis (QCA) is employed (Chang, Tseng, & Woodside, 2013; Wu, Yeh, & Woodside, 2014). QCA uses Boolean algebra rules to identify which of the attribute combinations (also called “recipes”, Ragin 2000), lead to the desired outcome (Fiss, 2011). Overall, the present research contributes in several ways. First, it addresses extreme sporting events rather than traditional ones, and active rather than passive participation, thus answering calls in recent literature (e.g., Du et al., 2015). Second, it includes considerations from psychology to identify relevant predictors of satisfaction for extreme sport participants. Third, it introduces QCA for the first time in understanding what drives satisfaction in extreme consumer-athletes.

We show that sensation-seeking and perceived control are relevant predictors of satisfaction toward the event for extreme sport participants. However, we extend previous knowledge by showing that sensation seeking and perceived control work together with the other variables. For instance, we show that a negative attitude toward the event and low levels of trust do not automatically lead to low levels of satisfaction, but satisfaction depends on the specific combinations of the considered variables. Specifically, we identify combinations of the predictors that have a superior performance and show how different set relations can unfold among the considered variables, yet lead to a positive outcome.

## **1. Theoretical Background**

### *2.1. Applying complexity theory to satisfaction toward extreme sports events*

Complexity theory provides a useful guide for investigating the relationships among the considered variables, because it suggests going beyond the mere identification of main effects (Russo et al., 2016). Specifically, it places attention on contrarian case analysis, with the understanding that - although the data might suggest that X is overall positively related to Y- the same data set can include opposite cases. That is to say, cases where X and Y are not related, or are negatively related (Hsiao et al., 2015). This allows for a more insightful perspective of the relationships between the dependent and independent variables (Woodside, 2014). Complexity theory suggests that the same outcome (satisfaction, in the present case) can come from multiple

possible combinations of indicators (sensation seeking, perceived control, trust, attitude and event image, in the present case). This stems from the complexity of the relationship between the dependent and independent variables, so that there is the possibility that the relationship changes based on different configurations.

In summary, variables could interact without the constraint of limited unique situations, and not necessarily only in a linear way (Woodside, 2014). Thus, complexity theory provides a more solid conceptual tool for assessing the relationship between the dependent and independent variables by accounting for more dynamic and complex relationships.

In the following, we present the variables of interest in our model, and the theories that suggest their potential relevance as predictors of participant satisfaction toward an extreme sporting event.

## *2.2. Psychological ingredients in the event satisfaction recipe*

Literature in psychology has explained the behavior of individuals engaging in extreme activities in terms of the Edgework Theory (Lyng 1990; Brymer and Houge Mackenzie 2016) and the Sensation-Seeking Theory (Zuckerman, 1979). The Edgework Theory (you need to be consistent with use of uppercase and lower case throughout the paper. I think theory would be better lower case) suggests that some individuals (so called “edgeworkers”) voluntarily seek risky challenges (Bunn, 2017), pain and danger (Laurendeau, 2006) driven by a continuous desire for pushing their own limits and a feeling of reaching a superior state through struggle and fatigue. Further, the Sensation-Seeking Theory (Zuckerman, 2015) explains an individual voluntarily engaging in risky activities -such as extreme sports- referring to a specific personal trait (i.e., sensation-seeking) which pushes participants to desperately seek strong experiences (Brymer, 2010) with a constant -even addictive- need for intense sensations (Franques et al. , 2003).

## *2.3. Ingredients from the Edgework Theory*

According to the Edgework Theory, individuals actively engage in risky, potentially dangerous activities driven by their willingness to push their physical and psychological limits

further (Brymer and Houge Mackenzie, 2016), and such a willingness specifically characterizes extreme athletes (Gyimóthy and Mykletun, 2004). The need to push individual limits (i.e., pushing the edge, Lyng, 2004) urges individuals to constantly face incremental challenges, threats, pain, and effort, surpassing the achievements of the past (Atkinson, 2008; Allman et al., 2009).

By engaging in increasingly difficult and demanding situations, extreme sport participants aim to push their own limits in terms of ability to control increasingly risky activities or challenges (Lyng, 2008). For edgework individuals, negotiating the edge also means negotiating the edge of their capabilities of control over the activities they perform (Brymer and Houge Mackenzie, 2016). Perceived control is often conceived in terms of the theory of planned behavior (Ajzen, 1991), yet it has a psychological significance in the Edgework Theory. It refers to a coping mechanism adopted by individuals facing the unexpected, to buffer against threats through (even illusory) perceptions of control and self-aggrandizement, in order to establish self-identity (Gupta & Bonanno, 2010). Thus, the psychological perception of control is vital for extreme sports practitioners according to the Edgework Theory (Celsi, Rose, & Leigh, 1993), as it helps to push the edge further (Milovanovic, 2005). This is to say, perceptions of control convey the mindset to successfully negotiate the edge (Lyng, 1990).

Participation in extreme sporting events is not so much about risk-taking (Barlow et al., 2015): participants acknowledge the potential fatal outcome of a mistake or accident, which does not mean that they search for risks *per se*, but rather that they undertake detailed preparation in order to minimize negative outcomes (Brymer, 2010), with physical and psychological training being a way to minimize risk (Birrer and Morgan, 2010). Accordingly, from the Edgework Theory we derive that the extent to which participants feel in control of challenges during an extreme sporting event might help to explain their satisfaction toward the event. To further support this possibility, participants' perceptions of control have also recently been found to be determinants of the overall enjoyment of edgeworkers' leisure experience (Hardie-Bick and Bonner, 2016; Kancheva, 2017).

#### *2.4. Ingredients from the Sensation-Seeking Theory*



The sensation-Seeking Theory provides additional -though not conflicting- explanatory insights into individual involvement in extreme sports based on, namely, the sensation-seeking personality trait (Schrot, 1995). Sensation seeking refers to looking for an optimal level of stimulation by means of “the seeking of varied, novel, complex and intense sensations and experiences, and the willingness to take physical, social, legal, and financial risks for the sake of such experiences” (Zuckerman, 1994, p. 27). It denotes a personal trait pushing the individual to seek new experiences, leading him/her to voluntarily take the risks usually associated with these experiences (Zuckerman, 2015). In particular, the experiences sought by sensation-seekers are denoted by novelty, intensity and riskiness, which sensation-seekers look for with increasing levels, to increase the intensity of their experienced stimulation (Roberti, 2004) with mechanisms that have recently been found comparable to psychological addiction (Heirene et al., 2016; Frühauf et al., 2017).

Sensation seeking has recently been positively associated with a variety of risky behaviors, like adventure tourism (Holm et al., 2017) and extreme sports (Marengo et al, 2017). Particularly, it has been suggested that individuals denoted by sensation seeking motives often engage in extreme sports (Brymer & Houge-Mackenzie, 2016; Heirene et al, 2016).

The combined evidence from these studies could suggest that events that align with participants’ optimal levels of arousal, will be more likely to induce more positive reactions from the participating athletes. In this vein, in a study of events related to storm chasers, Xu et al (2012) found significant positive associations between event satisfaction and sensation-seeking. Based on these considerations and findings, we advance that sensation seeking could be included among possible drivers of satisfaction toward the event for extreme athletes.

## *2.5. Marketing-related ingredients in the event satisfaction recipe*

Satisfaction is a key construct in marketing and sports marketing research and a solid, extensive body of literature links satisfaction toward an object to consumer attitudes toward that same object. Attitudes have been defined as “a psychological tendency that is expressed by evaluating a particular entity with some degree of favor or disfavor” (Eagly and Chaiken, 1993, p. 1). Positive or negative evaluations of a specific object are reflected in attitudes towards that object (Fishbein and Ajzen, 1975), in an attitude-formation process that can be direct (e.g.,

through the direct experience with a certain object), or indirectly (e.g., through exposure to word of mouth or advertising). Attitudes are not static, rather they change over time depending on individual cognitive processing (e.g., Bettman et al., 1998; Fiske and Taylor, 1991) and are processed through either an 'outside in' or an 'inside out' formation mechanism (Kaplanidou and Gibson, 2010). Once attitudes are formed, they become a powerful driver of consumer responses (Fazio et al., 1989), intentions to engage in specific behaviors (Downs and Hausenblas, 2005), and post-experience outcomes such as satisfaction (Oliver, 1999; Hellier et al., 2003). Sports are no exception, both for active (e.g., Kaplanidou & Gibson, 2010) or passive (Cunningham & Kwon, 2003) participation.

Additional variables that a solid body of evidence from marketing and sport marketing literature usually identifies as significant predictors of satisfaction toward an event are trust in the brand organizing the event, and consumers' image of the event. The latter can be defined as consumers' holistic interpretation of the meanings they ascribe to an event (Gwinner and Eaton, 1999). In sport marketing, brands develop strong associations with events, to the point that, in many cases, iconic events are marketed as a brand themselves. This phenomenon is particularly evident in extreme sports (e.g., Ironman Triathlon; ESPN X-Games), where there is often a full overlap between the image of the event and the image of the organizing brand (Walker et al, 2013), through a process of image transfer (Gwinner and Eaton, 1999). Brand image reflects the picture consumers develop in their mind for a specific object (Cretu and Brodie, 2007) and encompasses several perceptions and symbolic meanings associated with specific brand attributes (Chen, 2010). Accordingly, consumers instil in sporting events functional, symbolic, and emotional meanings (Filo et al., 2008), so that the event-brand image becomes crucial in developing relationships with consumers (Marinova and Singh, 2014). In the sport marketing literature, brand-event image has been found to be a crucial predictor of attitudes and behaviors (Simmons and Becker-Olsen, 2006; Grohs and Reisinger, 2014).

Finally, trust in the event-brand concerns how much the consumers perceive it to be reliable and this is built through positive, repeated evaluations or experiences with the event-brand (Johnson and Grayson, 2005; Morgan & Hunt, 1994). Trust goes beyond the mere knowledge of the brand, also encompassing care, concern and affect (Johnson & Grayson, 2005), and ultimately leads to higher levels of satisfaction, as higher levels of satisfaction are likely to follow when customer perception of trust is higher (Lee & Chung, 2009).

## *2.6. Theoretical propositions*

Integrating insights from literature in marketing and in psychology, we posit that, although the drivers of satisfaction usually addressed in marketing studies also matter for extreme sporting events, further elements related to the psychology of individuals engaging in extreme challenges have to be considered as well. This is to say, our conceptual framework envisions satisfaction toward extreme sporting events as a complex phenomenon, in which the configuration of the attributes is relevant as both psychological- and marketing-related variables appear to potentially be able to play a role in driving edgework consumers' satisfaction toward the extreme event. Specifically, we acknowledge that trust and positive attitudes can lead to satisfaction as documented by an abundant literature. However, based on the Edgework Theory and the Sensation-Seeking Theory, we posit that perceived control and sensation-seeking can also drive the satisfaction of extreme sport participants. Furthermore, based on complexity theory, we consider that taking these variables together could lead to different sets of relationships. Thus, satisfaction could be present even in the absence of some variables, and could stem from different combinations of the independent variables.

Accordingly, the general propositions implied in our theoretical framework are as follows:

**Proposition 1:** an individual attribute in a recipe can contribute positively or negatively to satisfaction toward the event depending on the presence or absence of other ingredients in the recipe (perceived control, sensation-seeking, attitude, event image, trust).

**Proposition 2:** satisfaction can stem from configurations which are only marketing-related, only edgework-related, or mixed.

**Proposition 3:** Different configurations of attributes can equally lead to satisfaction requirements.

In summary, as with other key marketing constructs, equifinal configurations providing effective explanations in single settings are limited to a few, coherent patterns of attributes (Russo et al, 2016). In this study, instead, configuration analysis is aimed at identifying equifinal configurations leading to satisfaction in extreme sporting events, overcoming the typical limits of

individual causal condition through the analysis of factor configuration (Leischnig and Kasper-Brauer, 2015).

### **3. Research method**

#### *3.1. Data Collection and Measures*

In extreme sports, over 70% of revenues come from the active consumer-athletes (IPSO, 2016; Nielsen Scarborough, 2017) and rotate around major events (e.g. Ice Climbing World Cup, BMX world cup, etc.) that can gather thousands of active participants.

Accordingly, the data have been collected on consumer-athletes participating in leading competitions for extreme-sports. As the consumers-athletes have to wear a numbered bib in the events, the researchers randomly extracted numbers and interviewed the athletes with the matching bib. A total usable sample of 456 respondents (mean age = 41.26; 75.5% males) was collected by means of a paper-and-pencil questionnaire. The sample's demographics compare well with data about the average population practising extreme sports (mean age = 44, TBI, 2014; 60-80% males: GroupY, 2016; Team USA, 2016; University of BMX 2016).

Respondents were asked about perceived control (Kang, Hahn, Fortin, Hyun, & Eom, 2006), attitude toward the event (Roy and Cornwell, 2003), sensation seeking (Hoyle et al, 2002), brand trust (Balaji, Roy & Lassar 2017), event image (Grohs and Reisinger, 2014) and satisfaction toward the event (Picon, Castro, & Roldan, 2014), using 7-point Likert scales ranging from 1 (strongly disagree) to 7 (strongly agree). Details are reported in Table A.1 in the Appendix.

#### *3.2. Reliability and validity*

Reliability was satisfactory for all scales with Cronbach's alpha values above 80. A confirmatory factor analysis provides support for the convergent validity of the measures, with all factor loadings exceeding the recommended 0.6 threshold (Bagozzi and Yi, 1988), the composite reliability (CR) and the average variance extracted (AVE) being greater than the

recommended 0.7 and 0.5 thresholds, respectively (Fornell and Larcker, 1981). In the present study, the minimum CR is .80, and the minimum AVE is .57. Finally, discriminant validity is confirmed, as the minimum AVE (here: .57) exceeds the maximum squared correlation between any two variables (here: -.19). Details are reported in Table A.1 and Table A.2 in the Appendix.

#### **4. Data analysis**

In order to empirically test the theoretical propositions advanced in paragraph 2.5., we first investigate the presence of contrarian cases and we then run QCA to verify the existence of different combinations of the “ingredients” that lead to the high levels of satisfaction.

##### *4.1. Contrarian case analysis*

The investigated phenomenon is complex, so there could be cases -and even many cases- where the effects of X on Y are negative even if the total effect of the  $X \rightarrow Y$  relationship is positive. These cases are usually ignored as many studies run symmetric analyses, such as SEMs, where the focus is on how well high values of the independent variable can predict high values of the dependent variable. Instead, QCA is an asymmetric technique, where causes of high levels of Y usually differ from causes of low Y values. To overcome the potential limitation stemming from ignoring contrarian cases, Woodside (2014) suggests running a percentile (e.g. quintile) analysis, splitting consumers into five groups for each construct, and then examining the relationship among the constructs. This way, both the positive and the negative cases are addressed. Indeed, even if a main effect size between X and Y is large and positive, there will be some (or even many) cases that run counter to the main effect, especially in a dataset exceeding one-hundred observations (Hsiao et al., 2015). For instance, Russo et al. (2016) had 79 (25%) contrarian cases out of 317 cases for one of their independent variables (return management) on their dependent variable (loyalty).

Results from the contrarian analysis show that the main effect is mostly confirmed for trust (contrarians = 8%) and attitude (contrarians = 15%), which are confirmed to have a “symmetric” relationship with satisfaction toward the event. Instead, contrarian cases emerge running counter to the main effect of sensation seeking (positive contrarians = 15%, total = 21%), perceived

control (positive contrarians = 12%, total = 22%) and event image (positive contrarians = 21%, total = 27%). A contrarian case table is provided in the Appendix as an example (Table A.3). The relatively high presence of positive contrarians suggests that neither sensation seeking nor perceived control nor event image are sufficient to create high satisfaction. This provides initial support for our propositions 1 and 2: an individual attribute in a recipe can contribute positively or negatively to satisfaction toward the event depending on the presence or absence of the other ingredients in the recipe, and mixed configurations are needed. This is to say, reality is more complex. In the following, we adopt QCA to decompose generic complexity into specific recipes.

## 4.2. QCA

Following the procedure by Russo et al. (2016), the sample was split into a modeling subsample and a holdout sample, of 224 and 223 respondents, respectively. The holdout sample was used to assess the predictive validity of the model assessed in the modeling sample, as detailed in the following.

We use fuzzy-set QCA with the Quine-McCluskey Algorithm (Ragin 2000) to empirically examine the relationships between satisfaction toward the event and the possible combinations of its predictors (sensation-seeking, perceived control, trust in the event, event image, attitude toward the event). The application of QCA involves four sequential tasks (Fiss 2011; Ordanini et al., 2014): 1-defining the property space, 2-developing set-membership measures, 3-evaluating the consistency in set relations, 4-the logical reduction.

### 4.2.1. *The Property Space*

The property space consists of all possible configurations of the drivers of satisfaction, as identified from extant literature. Our study employs potentially important drivers identified by the edgework-related literature combined with elements from classic studies in marketing.

Accordingly, the property space consists of all combinations of three marketing-related attributes that could influence satisfaction (trust in the event, event image, attitude toward the event) and two edgework-related attributes (sensation-seeking, perceived control). Accordingly, with five conditions, our property space has 32 (equal to  $2^5$ ) corners where these corners identify

one of the  $2^5$  logical AND conjunctions between the five conditions (Schneider and Wagemann 2012).

#### 4.2.2. *Set-Membership Measures*

QCA is based on the concept of set membership, so that the initial measures need to be transformed to reflect the extent to which each case (i.e. each individual consumer surveyed) can be considered a member of the different sets reflecting configurations of attributes. As our variables are not dichotomous, we generate membership measures using a fuzzy-set calibration approach, to allow membership scores to vary in how much they belong to a set, ranging from 1 (full membership in the set) to 0 (full non-membership in the set), with intermediate membership levels in between (Ragin 2000). As Greckamer et al. (2008) point out, “properly calibrated fuzzy sets combine variables’ precision and explicit measurement with meaningful qualitative thresholds based on theoretical and substantive knowledge” (p.3). However, as QCA is intrinsically sensitive to membership measure calibration, best practices for calibration have to be followed. For instance, in the COMPASS software for QCA, the threshold for full membership is automatically set at 0.95, the threshold for maximum ambiguity is equal to 0.50 and the threshold for full non-membership is equal to 0.05. This helps to minimize the loss of information. Based on that, as in Ordanini et al. (2014), we specified three qualitative anchors for our calibration approach: the threshold for full membership in the set, fixed at the rating of 6 in our original 7-point scales; the threshold for full non-membership, fixed at the rating of 2; and the indifference point, fixed at the rating of 4. Then, the original values were centered on the cross-over point and transformed to odds ratio, whose natural logarithm leads to the desired fuzzy membership measure between 0 and 1 (Longest and Vaisey 2008; Ragin 2000).

However, the fact that full membership is fixed at the rating of 6 could be controversial, as well as other calibration choices, especially as in QCA “effective calibration is a half-conceptual, half-empirical process of identifying thresholds that meaningfully represent differences in kind and differences in degree among cases” (Greckamer et al. 2008, p. 7). Accordingly, QCA findings need to be tested for robustness, which is assessed if slightly different calibration decisions lead to similar findings (Schneider and Wagemann 2012), meaning that the identified paths do not lead to different interpretations (Greckham et al 2008). In this vein, Fiss (2011) evaluated the robustness of his findings by changing the cross-over point for conditions where

alternative cross-over points appeared plausible. In a similar fashion, we run the analysis by using the scales' extreme points (i.e., 1 instead of 2 to be fully out of the set and 7 instead of 6 to be fully in), and by imposing the stricter 0.8 threshold for consistency rather than 0.75 (Ordanini et al., 2014) in order to ensure the robustness of the results.

#### *4.2.3. Evaluating consistency in set relations*

We evaluated which configurations of attributes can act as sufficient conditions for satisfaction toward the event. With fuzzy sets, the assessment of consistency is complex because respondents can have partial memberships in all sets. Accordingly, consistency with fuzzy measures emerges when membership scores in a set of attributes are consistently less than or equal to membership scores in the outcome set. For a configuration to be considered as sufficient, its consistency measure should exceed the .75 threshold (Fiss 2011; Ordanini et al., 2014; de Villiers, 2017).

Furthermore, only the configurations represented by a certain minimum number of best-fit cases need to be included in the analysis (Fiss 2011), so we only consider configurations that have at least two best-fit cases or, in other words, those that at least two extreme sport participants perceive as being to their satisfaction, with the same proportion as Ordanini et al. (2014) -who used a minimum of three best-first with a sample of 300 respondents.

#### *4.2.4. Logical Reduction and analysis of configuration*

Finally, we computed the coverage measure for each sufficient configuration, to eliminate redundant elements, that is to say those configurations with an insufficient number of best-fit cases in the sample due to the lack of empirical data (Ragin and Sonnet 2004).

### *4.3. Findings from QCA*

The true table of potential combinations is reported in the Appendix (Table A.4), while Table 1 here below summarizes results from the QCA conducted by using the COMPASS software for fuzzy-set QCA. Specifically, Table 1 provides the coverage and consistency of the



seven combinations that the software identified as being “sufficient” after the four aforementioned steps.

**Table 1**

Sufficient configurations for satisfaction toward the event

	Config.1	Config.2	Config.3	Config.4	Config.5	Config.6	Config.7
sensation-seeking	•	•	•	•			
perceived control		•			•		•
trust in the event			•			•	•
event image				•	•	•	
attitude toward the event	⊗				⊗	⊗	•
Raw coverage	.68	.70	.72	.76	.58	.57	.48
Unique coverage	.008	.013	.014	.025	.006	.003	.040
Coverage consistency	.84	.91	.90	.83	.94	.94	.98

solution coverage: 0.92

solution consistency: 0.80

For the presence of high levels of satisfaction with the event, configuration 1 (~ATTITc\*SENSATc) reflects – a combination of absence of attitude toward the brand organizing the event and presence of sensation seeking. This configuration represents the case where respondents stated that they did not have a high opinion of the brand but displayed a high tendency toward seeking experiences that satisfy their need for sensationalism.

Configuration 2 (CONTROLC\*SENSATc) combines the presence of perceived control with the presence of sensation seeking. These respondents feel able to face the challenges provided by the sporting event, and also love facing these threatening challenges.

Configuration 3 (TRUSTc\*SENSATc) reflects the combined presence of extreme sport participants’ trust toward the brand organizing the event, and participants’ desire for experiencing strong sensations. That is to say, satisfaction with the event can be achieved through a positive combination of event-related and individual-related attributes, such as trust and sensation seeking, respectively.

Configuration 4 (SENSATc\*EVENTc) includes the combination of sensation seeking and positive image of the event. This combination highlights that high levels of satisfaction with the

event can be achieved by the co-presence of both event-related and individual-related drivers such as brand image and sensation seeking tendency, respectively.

Configuration 5 ( $\text{CONTROLc} * \sim \text{ATTITc} * \text{EVENTc}$ ) combines perceived control and positive event image. However, these respondents also experience a low level of positive attitude toward the organizing brand. This means that high levels of satisfaction with the event can be achieved despite the absence of a positive attitude, provided that the event itself has a positive image and participants perceive high levels of control over the event.

Similar to configuration 5, configuration 6 ( $\sim \text{ATTITc} * \text{TRUSTc} * \text{EVENTc}$ ) also shows that high levels of satisfaction with the event can be achieved even without the presence of positive attitudes toward the organizing brand, provided that extreme sport participants trust the organizing brand – as in configuration 5 – and hold a positive image of the event.

Finally, configuration 7 ( $\text{CONTROLc} * \text{ATTIT1c} * \text{TRUSTc}$ ) shows that a positive attitude toward the organizing brand can contribute to satisfaction with the event when combined with feelings of trust toward the brand and perceptions of control over the event.

The identification of multiple sufficient conditions described above supports equifinality (Fiss, 2011), and provides support for Proposition 2. That is to say, the presence or absence of different conditions can produce the same outcome depending on how they are combined with one another (Woodside, 2014).

In summary, results show a more than adequate overall solution with a coverage of .92 and overall consistency of .80. This indicates that a substantial proportion of the outcome is covered by the seven configurations. In detail, the results show that there is more than one configuration that achieves high values of raw coverage ( $C_2 > .7$ ) and of consistency ( $C_1 > .8$ ). Specifically, configuration 2 ( $\text{CONTROLc} * \text{SENSATc}$ :  $C_1 = .91$ ;  $C_2 = .70$ ), configuration 3 ( $\text{TRUSTc} * \text{SENSATc}$ :  $C_1 = .90$ ;  $C_2 = .72$ ), and configuration 4 ( $\text{SENSATc} * \text{EVENTc}$ :  $C_1 = .83$ ;  $C_2 = .76$ ). Furthermore, the other remaining four configurations also display a slightly lower, though still fairly high, level of coverage ( $C_2 > .56$ ) with high levels of consistency ( $C_1 > .84$ ). Thus, the antecedents identified by the analysis are necessary and their combination is sufficient for high levels of satisfaction with the event.

The presence of multiple sufficient configurations with high raw coverage and consistency, with low values of unique coverage, reflects the complexity of the phenomenon. The co-presence

of both marketing-related and edgework-related drivers in all of these configurations shows how satisfaction with extreme sporting events cannot be addressed by looking solely at brand-related drivers of satisfaction, as is commonly done in many previous studies set in traditional contexts, but event satisfaction has to also be addressed in light of the unique psychology of edgework individuals.

#### *4.4. Predictive validity*

As mentioned at the beginning of the method section, the sample was split into two halves. The first half was used to identify the proposed models. The second half was used, instead, to test the predictive validity of the proposed models identified in the first half, as a holdout sample (Gigerenzer & Brighton, 2009). On the data in the holdout sample we tested models 2, 3 and 4 (the most relevant models) derived from the modeling sample. The results suggest high consistency ( $C_1$ ) and high coverage ( $C_2$ ) for model 2 (CONTROLc\*SENSATc:  $C_1 = .84$ ;  $C_2 = .80$ ), model 3 (TRUSTc\*SENSATc:  $C_1 = .84$ ;  $C_2 = .80$ ) and model 4 (SENSATc\*EVENTc:  $C_1 = .81$ ;  $C_2 = .81$ ).

It is worth noting that the other models also display high levels of predictive validity (model 1: ~ATTITc\*SENSATc:  $C_1 = .84$ ,  $C_2 = .80$ ; model 5: CONTROLc\*~ATTITc\*EVENTc:  $C_1 = .57$ ,  $C_2 = .85$ ; model 6: ~ATTITc\*TRUSTc\*EVENTc:  $C_1 = .81$ ,  $C_2 = .82$ ; model 7: CONTROLc\*ATTIT1c\*TRUSTc:  $C_1 = .80$ ,  $C_2 = .90$ ).

The Appendix provides the XY Plots for configuration 2 (figure A.1).

## **5. Discussion**

The role of participant satisfaction as a key contributor to the success of sporting events has been consistently highlighted in the literature (Tsuji, Bennet and Zhang, 2007). Previous studies have identified possible predictors of participant satisfaction; however, they only focused on the main effects of these antecedents. Using complexity theory, we make several contributions to the literature. First, our results indicate that in the domain of extreme sports, satisfaction also stems from features related to the psychological mindset (Lyng, 1990) and traits (Zuckermann, 2015)

of extreme sport participants, as identified from the Edgework Theory and Sensation-Seeking Theory.

Second, we provide a more comprehensive framework to the literature on how event satisfaction is driven by a complex combination of attributes of the event and intrinsic psychological factors of the participant. Third, we show that some attributes can both contribute negatively or positively to participant satisfaction with the event, depending on how the various features of the event are combined.

Specifically, our results indicate that a negative attitude toward the brand does not necessarily lead to low levels of satisfaction with the event, despite previous literature indicating that the satisfaction-loyalty relationship is positively affected by attitude toward the brand (Suh & Youjae, 2006) that incorporates the set of associations stemming from prior experiences of the consumer with the brand (Woodruff, Cadotte, & Jenkins, 1983). For instance, our results show that the absence of positive attitude toward the organizing brand can still contribute to the presence of satisfaction with the event as long as it is combined with the presence of sensation seeking (configuration 1), sense of control over the event and positive event image (configuration 5), or in combination with brand trust and positive event image (configuration 6). At the same time, however, the approach adopted in the present research also recognizes that the presence of participants' positive attitude toward the organizing brand contributes to overall satisfaction with the event when people trust the organizing brand and feel a sense of control over the challenges they are facing (configuration 7). A closer comparison between configuration 6 and configuration 7 clearly highlights the importance of considering all of the possible complex set relations as provided by the present research: brand trust is present in both configuration 6 and 7, but it is logically combined with the absence and with the presence of attitude toward the brand, respectively. This might sound counterintuitive if it is not interpreted in the light of the equifinality characterizing the QCA approach that allows for the identification of the different set relations through which the presence or absence of a given variable can be associated with an outcome variable. This research shows that participants can feel a sense of satisfaction even if they do not have a positive attitude toward the brand organizing the event, provided they trust the brand and hold a positive image of the event. Noticeably, satisfaction can still be present even when participants trust the brand, but do not have a positive overall attitude

toward the brand, thus supporting previous studies advancing that trust and attitude are two distinct constructs (Okazaki, Katsukura, & Nishiyama, 2007).

With regards to the role played by the psychological traits of extreme sport participants, the present study illustrates that they are relevant as well in shaping the satisfaction judgment with the event. The presence of sensation seeking enhances event satisfaction in four out of the seven configurations that emerged from the analysis. This finding supports previous studies building on the Edgework Theory that addresses the role of sensation seeking as an intrinsic characteristic of extreme sport participants who derive satisfaction from overcoming increasingly higher expectations about their limits (e.g. Gyimóthy and Mykletun, 2004; Brymer and Houge Mackenzie, 2016), but extends previous knowledge by showing that sensation seeking is not a driver of satisfaction with an event *per se*. Rather, sensation seeking works in combination with other event-related variables such as attitude toward the organizing brand, trust toward the organizing brand, event image and sense of control over the event. With regards to the latter, the present study offers empirical support to Laurendeau (2006) who suggested that the better extreme activities are organized, the higher participants' degree of perceived control will be.

In summary, our findings shed light on the complexity of the process that leads to participant satisfaction toward an extreme sporting event. We show that satisfaction has to be explained by acknowledging both the psychological drivers of "extreme" individuals, and the complex reality in which this variable manifests itself. The relationships between the antecedents of satisfaction can be non-linear with abrupt switches, so the same antecedent can, under certain circumstances, exert a different impact. Our findings reveal that -despite the abundance of previous studies on satisfaction- reality is more complex, at least in the domain of extreme sports. Future research in this area should therefore incorporate psychological traits in the study of satisfaction toward extreme sporting events, and allow for non-linear relationships among the predictor variables.

## **6. Managerial implications**

Results from the present analysis might also extend managerial knowledge about how the organization of events targeting consumers with extreme behavior tendency can favor satisfaction judgments that ultimately translate into higher consumer loyalty and WOM referral.

First, our results show that the fact itself that participants are highly motivated and involved does not directly translate into higher levels of satisfaction. Extreme sport participants' intrinsic psychological traits systematically combine with event-related features in driving the satisfaction judgment. Accordingly, event organizers are encouraged to be meticulous in defining how the event unfolds and regarding the image it conveys to participants. Second, our results clearly show that it is neither a necessary nor a sufficient condition to be a brand associated with a positive attitude in order to obtain positive outcomes from the organization of an event. Based on the results of the present research, the absence of a strong attitude toward the brand can be compensated by conveying the presence of a strong image of the event itself, by making participants perceive a strong sense of control over the experience, and by eliciting a general sense of trust toward the brand. Finally, the relevance of psychological traits such as sensation-seeking and sense of control -as highlighted by the present research- places the emphasis on a correct targeting of the event, because a mismatch between participants' orientations toward risk and control and the actual performance of the event would result in the absence of event satisfaction.

## **7. Limitations and future research**

An intrinsic limitation to QCA-based studies is the possible sensitivity to measures, as QCA is based on membership measures calibrated around conceptual thresholds (e.g., fully in, more out than in, etc.). The definition of such thresholds often involves the researcher's subjective judgment due to the qualitative nature of the analysis, so that the criteria for inclusion or exclusion have to be driven by existing knowledge, rather than by a specific data distribution of the sample (Ragin 2000, Schneider, 2014). To minimize the problem, the calibration procedure was grounded in the methodological guidelines in the QCA literature (Schneider and Wagemann 2012; de Villiers, 2017).

Finally, this analysis is purposely restricted to a context characterized by extreme behaviors and a sensation-seeking tendency that might result in expectations always being placed at a higher level. Since the level at which expectations are set ultimately affects whether the actual performance qualifies as satisfactory or not, the present analysis does not allow for the drawing of any inference on the relationship between psychological traits and event-related features in

different contexts characterized by higher levels of extremeness aversion (e.g. a trade show). Future research might therefore attempt to replicate the findings presented in the present research in different empirical contexts denoted by different levels of extremeness.

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## APPENDIX

**Table A.1**

Construct measures and confirmatory factor analysis results.

Measures	Factor Loading	CR	AVE	Cronbach alpha
Satisfaction		.86	.61	.88
This event meets my needs.	.77			
This event is as good as or even better than other events.	.84			
This event gives me what I expect.	.77			
In general, my experience with this event is positive.	.84			
Trust		.83	.62	.82
I trust this event.	.70			
I have a trustworthy perception of this event.	.94			
I have confidence in this event.	.70			
Event Image		.93	.77	.93
This event is active.	.94			
This event is innovative.	.87			
This event is cool.	.91			
-This event is up to-date.	.77			
Sensation seeking		.63	.87	.84
I would like to explore strange places.	.72			
I get restless when I spend too much time at home.	.80			
I prefer friends who are excitingly unpredictable	.87			
I like to do frightening things.	.78			
Perceived control		.80	.57	.80

Whenever I want to perform this sport in public events, I only need to search for them.	.67			
It is easy to perform at this event.	.78			
As far as this event is organized, it is easy for me to perform in it.	.81			
Attitude toward the brand organizing the event		.93	.81	.94
Bad-good	.95			
Unfavorable-favorable	.85			
Negative-positive	.90			
Composite reliability (CR); average variance extracted (AVE)				

**Table A.2**

Pairwise Correlations of Variables (Fuzzy-Set Scores).

	Satisfaction	Trust	Attitude	Image	Sensation	Perc.Contr.
Satisfaction	1.00	.19	.01	.00	.00	.08
Trust	.19	1.00	.01	.00	.01	.06
Attitude	.01	.01	1.00	.01	.12	.00
Image	.00	.00	.01	1.00	.01	.00
Sensation	.00	.01	.12	.01	1.00	.01
Perc.Contr.	.08	.06	.00	.00	.01	1.00



**Table A.3**

Contrarian analysis table for trust and satisfaction.

			Satisfaction					Total	
			2.00	3.00	4.00	5.00	6.00		7.00
trust	1.00	Count	2*	0*	0	0°	0°	4°	6
		% within trust	33.3% *	.0% *	.0%	.0%°	.0%°	66.7%°	100.0%
	2.00	Count	2*	2*	0	8°	4°	0°	16
		% within trust	12.5% *	12.5% *	.0%	50.0%°	25.0%°	.0%°	100.0%
	3.00	Count	2*	12*	7	9°	5°	2°	37
		% within trust	5.4% *	32.4% *	18.9%	24.3%°	13.5%°	5.4%°	100.0%
	4.00	Count	0	5	22	49	27	5	108
		% within trust	.0%	4.6%	20.4%	45.4%	25.0%	4.6%	100.0%
	5.00	Count	0§	2§	22	31*	45*	6*	106
		% within trust	.0%§	1.9%§	20.8%	29.2%*	42.5%*	5.7%*	100.0%
	6.00	Count	0§	0§	4	36*	67*	20*	127
		% within trust	.0%§	.0%§	3.1%	28.3%*	52.8%*	15.7%*	100.0%
	7.00	Count	0§	2§	2	15*	16*	21*	56
		% within trust	.0%§	3.6%§	3.6%	26.8%*	28.6%*	37.5%*	100.0%
Total	Count	6	23	57	148	164	58	456	
	% within trust	1.3%	5.0%	12.5%	32.5%	36.0%	12.7%	100.0%	

\* = cases supporting the main effect (277); ° = negative contrarian cases (32); § = positive contrarian cases (4)

# Table A.4

True table of potential combinations.

Edit Truth Table

File Edit

CONTROLc	ATTIT1c	TRUSTc	SENSATc	EVENTc	number	SATISFc	cases	raw consist.	PRI consist.	SYM consist
1	0	1	0	1	88 (19%)		cases	0.980691	0.956169	0.957636
0	0	0	0	1	41 (28%)		cases	0.892962	0.649374	0.649376
0	0	1	0	1	40 (37%)		cases	0.972721	0.924232	0.927661
1	0	0	0	1	40 (45%)		cases	0.964523	0.882462	0.882462
1	1	1	0	1	33 (53%)		cases	0.992656	0.980417	0.980835
0	1	1	0	1	27 (59%)		cases	0.99034	0.970827	0.970828
0	1	0	0	1	20 (63%)		cases	0.947339	0.784614	0.784616
1	0	1	0	0	19 (67%)		cases	0.990191	0.967479	0.967479
1	1	1	1	0	15 (70%)		cases	0.994969	0.980869	0.986014
1	1	0	0	1	14 (73%)		cases	0.982537	0.925789	0.926639
1	1	1	1	1	13 (76%)		cases	0.995054	0.983427	0.992656
0	0	1	0	0	13 (79%)		cases	0.980679	0.924819	0.924818
0	0	0	0	0	12 (82%)		cases	0.969313	0.85515	0.855148
1	0	1	1	1	11 (84%)		cases	0.986172	0.950322	0.950322
1	1	1	0	0	10 (86%)		cases	0.993977	0.977578	0.978456
1	0	0	1	1	9 (88%)		cases	0.984102	0.91274	0.91274
1	1	0	1	1	9 (90%)		cases	0.972052	0.84642	0.84642
1	0	0	0	0	8 (92%)		cases	0.99051	0.953168	0.953168
0	1	1	0	0	6 (93%)		cases	0.999199	0.996387	0.996387
0	1	1	1	1	6 (95%)		cases	0.994564	0.977462	0.977461

**Figure A.1.**

Configuration 2: CONTROLc\*SENSATc; high sensation seeking and high perceived control

