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Who Participates in Extreme Obstacle Courses and Why

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Abstract

This study aimed to examine who participates in extreme obstacle courses (EOCs) and why. Drawing from the Big Five theory of personality, and the self-determination theory of motivation, this study examined the interaction of individual difference variables (IDVs) and motivation in a sample of 79 people interested in running extreme obstacle courses. Specifically, demographics, extraversion, openness to experience, general self-efficacy, and physical self-efficacy were examined regarding how they relate to the number of EOCs participants run, and whether they run for intrinsically motivated reasons. Findings suggest that most participants were male, European-American and of high SES. The majority reported being intrinsically motivated (with “fun” being the most frequently endorsed reason for being interested in or having participated in EOCs). Extraversion was significantly positively correlated with intrinsic motivation, and significantly negatively correlated with the combination of intrinsic and extrinsic motivation, and physical self-efficacy was marginally related to the number of EOCs participants run. No interactions between personality variables and motivations were found to affect number of EOCs ran. Interpretations of these and other findings, as well as study limitations, are discussed.

Who Participates in Extreme Obstacle Courses and Why

According to the American Heart Association, 154.7 million Americans over age 20 are overweight or obese (Go et al., 2013); worldwide, an estimated one billion adults are obese, and an additional 475 million are overweight (World Obesity Federation, 2014). With obesity so prevalent, exercise has received special attention over the past few years, and fitness has become an important part of daily life. We are exposed to exercise in the media on many different levels, from gyms and yoga studios offering free or discounted classes, to magazines putting easy 20-minute workout routines on the front cover, to Michelle Obama launching her “Let’s Move” fitness campaign.

Fortunately there are many different forms of exercise to choose from, so people can tailor their workout to their preferences. Among the various fitness trends, one of the fastest growing sports activities is the extreme obstacle course (EOC). According to Tough Mudder[®], one of the most popular brands of EOC, there have been 1.3 million participants since 2013, and they average 10-15 thousand people per event (Tough Mudder, 2014).

The extreme obstacle course comes in many different forms, from “name brand” companies like the aforementioned Tough Mudder[®] and Spartan Race[®] to the more militaristic Goruck[®], to the newer, wacky spin-offs like The Zombie Run: Extreme[®]. Each course offers something a little different, but they all have three things in common: running, obstacles, and teamwork.

The Extreme Obstacle Course

Every obstacle course is different, and puts its own spin on the activity. Tough Mudder[®] is a 10-12 mile course loaded with obstacles including scaling walls, crawling through mud with live wires dangling just above you, and jumping into freezing cold water (“Tough Mudder”,

2014). Spartan Race[®] is similar, but offers different levels of difficulty and puts more emphasis on the clock, stating that they want their participants to not only be working together to complete the course, but also to shoot for strong performance and reach their time goals (“Spartan Race”, 2013).

Conversely, Goruck[®] de-emphasizes time, and is strictly interested in pushing people to their limits in a military training course with a premium on team bonding and physical exertion. Goruck comes in many different difficulty levels. The ‘Nasty’, approximately 7 miles long with over 20 obstacles, is the most similar to the traditional extreme obstacle course. Aside from this, Goruck offers military training style courses, which involve walking a minimum of 7-10 miles with a backpack full of bricks or sandbags, while enduring bootcamp training activities with your teammates.

Finally, wacky offshoots offer the fun and challenge of a traditional obstacle course with the added feature of themes. The Zombie Run: Extreme[®], for example, is a 5k with 8-10 obstacles, which participants complete all while being chased by zombies.

Despite the growth in both the number of courses available worldwide, and the number of participants in extreme obstacle courses, research has yet to look at this activity critically. While marathons, team sports, and extreme sports have all received attention from a scientific vantage point, extreme obstacle courses have largely been left to the media.

The current study aims to understand the psychology of running obstacles races, with a specific focus on who participates and why, looking not only at demographic information such as gender and socioeconomic status, but also at characteristics such as extraversion, openness to experience, self-efficacy, and motivation.

Who Participates in Extreme Obstacle Courses?

Currently, little is known about who participates in extreme obstacle courses. According to Tough Mudder, the average age of their participants is 29, and 70% of their participants are male (Tough Mudder, 2014). While no other companies have released demographic information, due to the similar nature of many of these events (excluding races geared exclusively toward women such as SHAPE Diva Dash[©] and Dirty Girl Mud Run[©]) it seems reasonable to assume that these demographics represent the participants in many of the extreme obstacle courses currently on the market.

Furthermore, according to the founder of Tough Mudder, “white collar urban professionals” are a key demographic, and companies such as Morgan Stanley and Goldman Sachs bring large groups to the events (Stein, 2012). Additionally, registration fees may exceed \$200, depending on the race and when participants register. Considering the cost of entry, and the heavy participation of large companies, it might also be reasonably assumed that most participants are upper middle class.

However, much of this is speculation. This study seeks to learn more about the demographics of who participates, as well as about the personality traits of those interested in extreme obstacle courses.

Personality and Extreme Sports: The Big Five

While little is known about who participates in extreme obstacle courses, the study of who participates in other extreme sports is of great interest to many researchers. Specifically, researchers have studied whether certain personalities are drawn to extreme sports.

Previous research on extreme sports has looked closely into whether participants of extreme sports rate higher on Extraversion and Openness than those who do not participate in

extreme sports. Extraversion is described as having an energetic approach towards life, while Openness describes the personality dimension related to the extent to which one lives their life with originality, and the degree of intricacy and involvement in one's mental and experiential life (John, Naumann, & Soto, 2008).

Kajtna, Tusak, Baric, and Burnik (2004) pitted high-risk sports participants against non-risk sports participants and non-athletes. Participants of high-risk sports engaged in activities such as sky-diving, white water rafting, and downhill skiing. These individuals were found to be more extraverted than non-athletes, as well as more conscientious and emotionally stable. Similarly, Tok (2011) found participants of risky sports such as scuba diving, rock climbing, rafting, and surfing, to be higher in extraversion than non-participants.

Regarding openness, Diehm and Armatas (2004) looked at personality and motivational differences between surfers (high-risk) and golfers (low-risk). The researchers found that the surfers in this study scored higher on openness to experience than the golfers, corroborating Tok's (2011) finding that participants of extreme sports were higher in openness compared to non extreme sports participants.

Other studies have found somewhat conflicting results. Kajtna et al. (2004) actually found non-risk sports participants to be higher on openness than non-participants, whereas there was no difference between the two sports groups; the high-risk and non-risk sports participants were equally high. One possible explanation for this discrepancy in findings could lie in the definition of non-risk sports. Kajtna et al (2004) listed kayaking, sports climbing (rock climbing with anchors fixed to the rock for protection), and slalom skiing, as low-risk sports. While these sports may pose less risk than the sports in their high-risk category (e.g., skydiving), they still involve greater risk than golf, and indeed rock climbing was listed among the risky/adventure

sports in the Tok (2011) study. Thus, the disagreement among which sports belong in what category, and the lack of specification regarding the degree of risk in each sport, may be causing the differing results for the openness trait. As extreme obstacle courses involve a number of risky obstacles (e.g., running through a field of hanging live wires and jumping over a wall), and often request that participants sign a death waiver prior to participating, it can be assumed that they would fall into the category of adventure/risky sports. Based on the similarities of EOCs to other extreme sports, one might predict that extraversion and openness would be associated with participation in EOCs.

Why People Participate

Why people participate in extreme obstacle courses is a question of motivation. One theory of motivation that may help explain why so many people are interested in these events is the self-determination theory (SDT). The self-determination theory classifies different types of motivation, and theorizes that three basic psychological needs, when met, increase the likelihood of being intrinsically motivated. According to Ryan and Deci (2000), motivation breaks into three categories: intrinsic, extrinsic, and amotivation. Amotivation identifies behaviors that are done unintentionally, and occur when the individual does not value the action or outcome of a behavior. Conversely, intrinsic motivation is described as the desire to perform an activity for the satisfaction of the activity itself. Between amotivation and intrinsic motivation is extrinsic motivation, which refers to the performance of an activity to achieve an external outcome. Extrinsic motivation breaks down into four forms: integrated, identified, introjected, and external. Integrated regulation refers to the point at which a behavior has been fully incorporated into a person's identity; the only difference between integrated regulation and intrinsic motivation is that in integrated-extrinsic motivation the performance of an action is still done to

achieve some end or outcome, rather than for the enjoyment of the activity itself. For example, if a person has little experience in rock climbing, but enjoys extreme sports and believes they are important, is invited to go on a rock climbing excursion, they may go not because they love rock climbing, but rather because the activity aligns with their belief in the importance or appreciation of extreme sports. Identified regulation refers to motivation to perform an activity because the outcome is valued, and thus the action has been identified as personally important; however, the action is not yet incorporated into one's sense of self, separating it from integrated regulation. An example would be if a person is trying to be more adventurous, they might go white-water rafting, not because they enjoy the sport, but because they believe that participating could lead to their end goal of becoming more adventurous. Introjected regulation is a form of motivation in which the action is performed for the benefit of one's self esteem, but the action is not yet considered personally important. If an individual goes skydiving because he fears that if he does not, his peers will judge him as being a coward, he is participating to avoid shame and protect his self-esteem. Finally, external regulation describes the motivation to perform an activity to satisfy external demands. For example, if an individual attempts to climb Mt. Everest because he wants fame and recognition, he may have no interest in mountain climbing, but rather is motivated by the attention to be gained from completing the act.

The self-determination theory further suggests that there are three basic psychological needs that, when met, lead to intrinsic motivation: autonomy, competence, and relatedness (Ryan & Deci, 2000). Autonomy describes the level of perceived control one has over their own actions and choices, competence describes one's ability to complete the tasks at hand, and relatedness describes one's sense of camaraderie with others. Considerable research on self-determination theory in physical activity has been conducted. Edmunds, Ntoumanis, and Duda (2006) recruited

369 participants and had them complete questionnaires regarding how much they exercised, whether their psychological needs (autonomy, competence and relatedness) were met through their exercise, and whether their motivation to participate was intrinsic, identified, introjected, or external. They found that in the exercise domain, autonomy was the most highly satisfied need, and that autonomy was negatively correlated with introjected regulation, meaning that the more control one felt over their exercise behaviors, the less likely they performed those behaviors simply as a way to protect their self-esteem or avoid punishment. Additionally, they found that intrinsic motivation was the most common motivation to participate in physical activity, and that intrinsic motivation and identified regulation were positively correlated with all three psychological needs, thus supporting the self-determination theory's assertion that fulfilling autonomy, competence, and relatedness needs was correlated to intrinsic motivation.

The researchers followed this study with a second study in which they trained an exercise instructor on how to teach a 10-week fitness class to increase feelings of autonomy, competence, and relatedness among the participants, and compared those participants to participants in a standard 10-week exercise class (Edmunds, Ntoumanis, & Duda, 2008). They found that participants in the SDT-based class experienced greater positive affect by the end of the 10-week session, and attended more classes, than those in the control condition. This finding suggests that by meeting the three basic psychological needs, people were happier and more likely to regularly participate in the exercise classes. This suggests that meeting the three basic needs has a reinforcing effect on behavior, such that when people recognize that an action fulfills autonomy, competence and relatedness needs, they are more likely to repeat the behavior.

Taken together, these studies suggest that when activities meet autonomy, competence, and relatedness needs, individuals enjoy participating in them, meaning that they participate for

intrinsic reasons, and they may participate in them more frequently. Thus, self-determination theory provides an excellent framework to explore why people are motivated to engage in physical activities. Extreme obstacle courses provide ample opportunities for participants to meet their autonomy, competence, and relatedness needs. Individuals may complete the course at their own pace, and may decide for themselves whether they wish to skip or complete an obstacle, thus meeting their autonomy needs. Competence needs are met through the completion of each obstacle, and ultimately the completion of the entire course. Finally, due to the structure of many of the obstacles, participants are unable to complete certain obstacles without the help of other people, thereby forcing people to work together. This may facilitate the development of camaraderie among teammates and other participants alike, in turn meeting relatedness needs. Thus, if participation in extreme obstacle courses meets the three basic needs, then it seems likely that participants will be more intrinsically motivated, and consequently may continue to sign up for obstacle course events.

Self-Efficacy: The Link Between Who and Why

Defined as one's belief in their personal capabilities to execute a given task (Bandura, 1997), self-efficacy may provide a bridge between who participates in extreme obstacles, and why. Competence, one of the three basic psychological needs, may be directly influenced by self-efficacy beliefs, and this relationship may be bi-directional. Self-efficacy beliefs influence cognitive, motivational, and behavioral processes (Bandura, 1993), and consequently may determine whether people successfully fulfill their competency needs. Conversely, individuals who successfully meet their need for competence may increase their levels of self-efficacy.

According to Bandura (1993), self-efficacy contributes to motivation through goal-setting, effort, perseverance in the face of difficulty, and resilience to failure. A study of top-

level athletes in extreme-risk, high-risk, and low-risk sports found no difference in general self-efficacy among the three groups, suggesting that perhaps self-efficacy was a result of skill level, rather than the risk involved in their chosen sports (Slanger & Rudestam, 1997). One multi-cultural study found general self-efficacy to be relevant in many different domains of human functioning (Luszczynska, Gutiérrez-Doña, & Schwarzer, 2005). Among other findings, this study found self-efficacy to be positively related to optimism, self-regulation, self-esteem, and appraisal of stressful situations as ‘challenges’; it was negatively related to anxiety. The positive relationship between general self-efficacy and appraisal of stressful situations as ‘challenges’ suggests that individuals high in self-efficacy may be more willing to push themselves or seek out challenges, compared to individuals with lower self-efficacy. Furthermore, this study found self-efficacy to be positively related to quality of social life, a finding further supported by Marcos, Miguel, Oliva, and Calvo (2010), who found that among semi-professional basketball and soccer teams, individual players’ sense of general self-efficacy was related to teamwork, an attraction to the group, and to positive social relations among the team members. In this sense, general self-efficacy appears to contribute towards meeting relatedness needs. Those higher in self-efficacy interact more positively with others, and have a greater sense of cohesion.

Self-efficacy can also be viewed as domain-specific, and thus a person may have high self-efficacy in certain areas, but not others. This domain-specificity has led to different forms of self-efficacy being studied, such as social self-efficacy, academic self-efficacy, and job-related self-efficacy. Physical self-efficacy seemed most prominent regarding extreme sports, and thus received focus in the present study. In the Slanger and Rudestam (1997) study of extreme-risk, high-risk, and low-risk athletes, two measures of physical self-efficacy were used. One measure specifically studied participant’s confidence towards three categories of error: trivial errors,

harmful errors, and fatal errors. In all categories, participants of low-risk sports were significantly less confident in their ability to handle errors compared to those in the high and extreme risk categories. Additionally, in the harmful error subscale, and in the fatal error subscale, as well as in the overall measure, extreme-risk athletes were significantly more self-efficacious than high-risk athletes, showing that higher risk athletes felt more capable of handling more dangerous situations.

A second measure of physical self-efficacy, which examined perceived physical ability, and physical self-presentation confidence, was used in that study as well. Interestingly, there were no differences between the three athlete groups regarding their perceived physical abilities, suggesting again that competence in one's abilities and willingness to take greater risks are separate constructs. However, on the physical self-presentation subscale, those in the high-risk and extreme-risk categories scored significantly higher than those in the low-risk category, suggesting that while all of the athletes in the study perceived themselves as having roughly equal physical abilities, those willing to take greater risks were more confident in their ability to display their skills to others. This is suggestive of a personality difference between the different groups. Specifically, this lends credence to the findings that extreme sport athletes may be more extroverted than low-risk athletes, as extroverts tend to be not only more adventurous, but also more sociable and outgoing (John & Srivastava, 1999).

Sometimes physical self-efficacy is further broken down to the specific physical activity. For example, in an analysis of rock climbers, Llewellyn, Sanchez, Asghar, and Jones (2008) studied whether climbing self-efficacy was associated with climbing difficulty, risk, experience, and frequency. The researchers found that individuals high in climbing self-efficacy engaged in medium risk climbing (indoor and outdoor sports leading, which involves climbing while

attached to permanent anchors as a safety precaution, and bouldering) and high risk climbing (soloing, which involves climbing without the use of permanent anchors, and traditional leading, when anchors are not permanent fixtures, but rather are placed along the rock as one climbs) more frequently and at greater levels of difficulty, compared to those lower in climbing self-efficacy. This reinforces the belief that people take greater risks and challenge themselves more when they have higher levels of domain-specific self-efficacy.

Given the potential risk involved in participation, and the opportunity for team cohesion and camaraderie, the findings from Marcos et al. (2010), Slanger and Rudestam (1997), and Llewellyn et al. (2008), are particularly relevant to the study of extreme obstacle courses. Thus, the current study examines both general and physical self-efficacy among participants of extreme obstacle courses (EOCs).

The Current Study

The current study examined the personality and demographic characteristics of individuals who participate in EOCs (the who) and their motivations for participating (the why).

In examining who participates, several hypotheses were formulated. First, based on research in other extreme sports, it was hypothesized that most participants would be high on the individual difference variables (IDVs) of extraversion (E), openness to experience (O), general self-efficacy (GSE), and physical self-efficacy (PSE). It was further hypothesized that individuals who are higher on individual difference variables (IDVs) would have run more EOCs.

Next, this study examined why people participate in EOCs. It was expected that most people participate in EOCs for intrinsic reasons. Thus, those who indicated intrinsic motivation

for running obstacle courses were expected to have run more races than those who indicated extrinsic motivation.

Finally, this study examined the intersection of who participates and why. Individuals higher in IDVs were hypothesized to be more likely to be intrinsically motivated to participate in EOCs. This study further hypothesized that IDVs would moderate the relationship between intrinsic motivation and number of EOCs run. Specifically, intrinsically motivated participants who scored higher on each of the IDVs were predicted to participate in more EOCs than those who scored lower on the IDVs.

Methods

Participants

Participants for this study were recruited to participate in an online survey about EOCs and the motivation for running in them. A total of 133 individuals opened up the survey. Of these, one participant was not over the age of 18, and was therefore eliminated from the study. All other participants were eligible. Of the 132 potential participants, 79 completed the survey; the remaining individuals either exited out of the survey immediately (28.57%), or started the survey but failed to complete it (12.03%). Of the 79 individuals who completed the survey, 55 offered demographic information, including age, sex, sexual orientation, and relationship status, and 44 shared information regarding ethnicity. Of those who offered personal information, 63.6% were male, the majority were married, European-American, heterosexual, reported an income of \$70,000 a year or more, were college graduates, and ranged in age from 23 to 62 ($M=35.58$; $SD 9.5$). See Table 1 for details.

Procedure

Recruitment. Participants were recruited via snowball technique, which relies on social networking. Anyone personally known by the researchers as having some interest in EOCs was contacted via email or phone (see appendix A). They were told that the researchers were studying who is interested in EOCs, and why, and invited to take the survey. They were further asked to recommend others who might be interested in participating in this research project, thus creating a snowball effect. A link to the survey was also posted on Facebook and Twitter (see appendix B), and others were asked to re-post the link to their own Facebook and Twitter accounts, in order to broaden the network of potential participants. This created a branching effect, where acquaintances of the researcher reached out to their own acquaintances, who reached out to their acquaintances, thus extending the scope of potential participants. Finally, the link was posted to EOC-related groups for each of the specific companies, as well as to general EOC interest groups (e.g., 'All Things Obstacle Racing' and 'Extreme Obstacle Course Runners, LLC').

Participant Involvement. Once participants decided that they were interested in completing the survey, they clicked on the link provided. The survey was designed using Qualtrics, a web-based software program for designing and distributing research surveys (Qualtrics, 2014). Participants first read the consent form, and then went through a brief screening process. They provided their age, and then indicated whether they were interested in EOCs. If they were under 18, or not interested in EOCs, they were redirected to the exit page, thanked for their interest in the study, and closed out of the survey.

For those who were both 18 years of age or older, and interested in EOCs, they were asked to create their own participant ID using their two-digit day of birth, followed by the last two digits of their mother's or primary caregiver's year of birth, followed by their mother's or

primary caregiver's initials. This ID was created so that, in the event that these participants ran in an EOC and filled out a follow up questionnaire, their information could be matched up between time points, without having any personally identifying information attached to their responses (e.g., individual names, emails, etc. could not be matched to survey responses).

Once participants created their ID, they filled out the survey, which took, on average, 23 minutes to complete. Once finished, they were redirected to an exit page, which was not attached to the information they just provided, in order to protect the privacy of participants. There, they were asked if they were currently signed up for a race, and if so, to please give the date of that race. Finally, they were asked to provide us with the email address to which they would like to receive the follow-up post-race survey. Then they were thanked for their time and interest.

Measures

Participants filled out several validated survey instruments (see Appendix C). They were also asked to provide information related to past and future participation in EOCs, and to give some demographic information (see Appendix D). The analyses reported for this study are based on Time 1 data and thus only the measures included at that timepoint are described here.

Extraversion. Participants were given the Extraversion Scale of the Big Five Inventory (BFI; John & Srivastava, 1999), with the stem, "I see myself as someone who..." followed by ten items to complete the sentence, including, "Generates a lot of enthusiasm," and, "Is sometimes shy, inhibited" (reverse scored). Participants rate each item on a scale from 1 to 5, with anchors 'disagree strongly' and 'agree strongly'. This scale has an alpha of .86 in the Srivastava, John, Gosling, & Potter, (2003) study, and .90 in the Thalmayer et al. (2011) student sample. Reliability was high in the current study (alpha = .89).

Openness to Experience. Participants were given the Openness to Experience Scale of the BFI (John & Srivastava, 1999), which consists of the sentence stem, “I see myself as someone who...” and then offers ten different sentence endings, such as “Is original, comes up with new ideas”, and, “Has an active imagination.” The participant is asked to rate each item on a scale from 1 to 5, with the anchors ‘disagree strongly’ and ‘agree strongly’. This scale has an internal consistency of .82 in a sample of undergraduates (Thalmayer, Saucier & Eigenhuis, 2011). In an online sample of 132,515 adults, the internal consistency was .80 (Srivastava et al., 2003). Reliability was moderate in the current study ($\alpha = .84$).

General Self-Efficacy. Participants were instructed to complete the eight-item New General Self Efficacy Scale (NGSE; Chen et al, 2001), in which they rated each item on a five-point scale from 1 ‘strongly disagree’ to 5 ‘strongly agree.’ The NGSE has an alpha range of .85 to .91 (Chen et al, 2001), after being tested in both undergraduate populations in the United States and among managers attending an MBA executive program in Israel. Example items are “I will be able to achieve most of the goals that I have set for myself,” and, “Compared to other people, I can do most tasks very well.” The reliability of the measure in the current study was .93.

Physical Self-Efficacy. To assess physical self-efficacy, the exercise self-efficacy subscale of the Sports and Physical Abilities section of the Self-Description Questionnaire III was used (SDQ3; Marsh and O’Neill, 1984). Ten statements were rated on a scale from 1 (definitely false) to 8 (definitely true), half of which were reverse scored. The Sports and Physical Abilities section of the SDQ3 has an internal consistency of .96 among a population of university students in Australia (Marsh and O’Neill, 1984). Example items are “I enjoy sports

and physical activities,” and “I’m not very good at any activities that require physical ability and coordination (reverse scored).” The reliability for the items used in this study was .86.

Obstacle Race Information. Several questions were included regarding prior experience with extreme obstacle courses. They were asked how many races they had participated in; they were also asked about participation in other sport events such as marathons, triathlons, or any involvement in competitive sports. This information was used to gain a better understanding of the athletic background of EOC participants, as well as to help examine whether repeated involvement in EOCs may be associated with different psychological profiles.

Motivation. Motivation to participate in EOCs was measured according to the reasons that individuals were interested in participating. Participants were allowed to select multiple reasons, and their choices were ‘friends’, ‘fun’, ‘previous’, and ‘other’. ‘Other’ required that individuals list why, and the reasons were coded thematically. Of the 13 individuals who chose ‘other’, 10 of them expressed their reason as looking to challenge themselves, and thus they were recoded as ‘challenge’. The three individuals who chose ‘other’, and were not coded as ‘challenge’, were excluded from analyses regarding motivation. Motivation was then categorized as ‘intrinsic’, ‘extrinsic’, or ‘both’, based on the reasons participants gave for participation. Intrinsic motivation was made up of ‘fun’, ‘previous’, and ‘challenge’. Extrinsic motivation consisted of ‘friends’ only. Both intrinsic and extrinsic consisted of a combination of ‘fun’, ‘previous’, and/or ‘challenge’, and ‘friends’. All motivations were coded as binary (yes/no).

Demographic Information. Demographic information, such as gender, sexuality, ethnicity, and SES were collected. Due to the small number of non-European or non-European American participants, ethnicity was collapsed as ‘European or European American’, ‘Non-European or European American.’

Results

The data were analyzed using SPSS V22.0.0 (IBM, 2013). Descriptive, correlational, and multivariate analyses were conducted to test the study hypotheses. First, results examining ‘who runs EOCs’ are reported, including demographic analyses and tests of hypotheses 1-3. Then, results for hypothesis 4 follow, examining ‘why people run EOCs’. Finally, results examining ‘the intersection of who and why’ (hypotheses 5 and 6) are reported. Throughout these analyses, number of EOCs run is treated as a continuous variable.

Who Participates in EOCs

Demographics. Demographic data describing the sample of those who either are interested in or have run EOCs are reported in the participant section of the Methods and can be seen in Table 1. The majority of the participants were European or European-American, 35.58 years old ($SD=9.52$), male, college educated, and reported an income of \$70,000 a year or more, with over half reporting an income of over \$100,000 a year, corroborating the expectations that most participants would be male and of a high SES. Furthermore, previous athletic history was examined among the participants. The majority of participants had prior athletic experience playing competitive sports. However, most participants were not marathon or triathlon runners.

In order to determine any differences between number of EOCs run and these demographics, t-tests for ethnicity, gender, and history of competitive sports, bivariate correlations between EOCs and age, history of marathon running, and triathlon running, and an analysis of variance (ANOVA) for income and education were conducted. Because there were so few non-European American participants, ethnicity was collapsed into two categories: European-American and Non-European American. No significant differences were found between ethnicity and number of EOCs run, $t(42) = -0.36$, $p = .72$, gender and number of EOCs run, $t(53) = 1.02$,

$p=.31$, or history of competitive sports and EOCs run, $t(52) = -.65$, $p=.52$. The bivariate correlations revealed a significant positive relationship with age and EOCs, and previous marathon experience and EOCs; running triathlon was not related to number of EOCs run (see Table 2). The ANOVA revealed significant main effects of income, $F(4,34)=4.08$, $p<.01$, and education, $F(5,34)=2.56$, $p<.05$ on the number of EOCs run, showing that those who had higher incomes and education were likely to run more races. Post hoc comparisons using the Bonferroni correction revealed that those who reported an income of over \$100,000 ran more EOCs than those who reported an income of \$15,000-34,999. Post hoc tests revealed no significant impact of education on number of EOCs.

Hypothesis 1: Participants would be high in Extraversion and Openness. In examining hypothesis 1, first means for E and O were calculated. For E, participants reported a mean of 3.47 (SD= .91). In a normative student sample using the same scale (Thalmayer et al., 2011), scores appear similar (M=3.38, SD=.81). However, in a normative community sample with the same scale (Srivastava et al., 2003), scores appeared somewhat lower than in the current sample (M=2.24, SD=.94).

Although the Big Five Inventory (BFI) does not directly state what is considered a high or low score on any of its subscales, standard statistical procedures suggest that anything above or below one standard deviation from the mean could be considered high or low. Using the community sample (Srivastava et al., 2003), means between the range of 1.30 to 3.18 would be considered “normal”. Thus, the scores in the current sample were above what would be considered the normal range, suggesting that participants of EOCs may be higher in E than general community samples.

Next, E scores were compared to participants of other extreme sports. The Kajtna et al. (2004) study comparing high-risk sports participants to non-risk sports participants and non-athletes was selected, as it was the only study found that offered mean score data of this population on personality factors. Mean scores were not listed, but rather graphed, and as such, to be conservative, when mean scores were not clear, they were rounded down to the closest whole number. This study used a different measure, the Big Five Observer Scale (BFO-S), which employs a 7-point scale. In order to compare the scores, a percent of maximum possible score (POMP) metric conversion was performed (Cohen, Cohen, Aiken & West, 1999). This is done in order to transform all of the results onto the same scale in a meaningful way; each transformed score represents the percentage of the possible points available in the given scale. The POMP procedure is $[(\text{observed score} - \text{minimum possible score}) / (\text{maximum possible score} - \text{minimum possible score})] \times 100$. The mean of the current study converts to 61.75%, whereas the mean in the Kajtna et al. (2004) study converts to approximately 68.75% for high-risk athletes, and 66.67% for non-risk athletes. Furthermore, non-athletes averaged a score of 60.42%, suggesting that the current study's population displayed similar levels of E to the non-athlete population of the Kajtna et al. (2004) study¹.

Next, the current study was interested in participant's scores on O. Participants reported a mean of 3.73, ($SD = .67$) on the O subscale, which did not appear to differ dramatically from the aforementioned student (Thalmayer et al., 2011) or community (Srivastava et al., 2003) samples ($M=3.62$, $SD=.62$; $M=3.02$, $SD=.70$, respectively), although differences are in the expected direction.

¹ All comparisons made between the current study and the Kajtna et al. (2004) study were conducted twice, once with and once without female respondents in the analysis, as the Kajtna et al. (2004) study used an all-male population. No differences were found. Percentages reported are based on the combined gender means.

In order to determine whether the O scores in this study were considered high, the Srivastava et al. (2003) mean and standard deviation score were again used to create a range of 'normal.' The mean score from the present study fell just outside of that range (2.32-3.72), suggesting that participants of EOCs may not be that much more open than those who do not participate in EOCs.

In order to draw comparisons between O among EOC participants, and those of other extreme sports, the Kajtna et al. (2004) study was again used. All scores were converted using the POMP technique. The mean score in the current study was converted to 68.25%. The mean O score from the high-risk athlete population from the Kajtna et al. (2004) study became 75%; non-risk athletes became 75%; non-athletes 68.75%. Thus, the current study displayed similar levels of O to those in the non-athlete group of the comparison study.

Hypothesis 2: Participants would be high in General and Physical Self-Efficacy. Participant's scores on GSE averaged 4.32 (SD = .65), which, when compared to the Chen et al. (2001) normative student sample (M=3.87; SD=.54), fell within the suggested range of normalcy (3.33-4.41). No general community samples using the NGSE measure could be located, so a study of self-efficacy and drinking behavior in a community sample (Oei, Hasking & Phillips, 2007), using the Sherer Self-Efficacy Scale, was used as a basis of comparison. Using the POMP metric, the mean score in Oei et al. was converted to 55.21%, compared to the current study's mean score of 83%, suggesting that participants of the current study were higher in GSE.

Next, this study wanted to compare GSE scores of participants of EOCs to those of other extreme athletes. Slinger and Rudestam (1997) looked at GSE among extreme athletes, high-risk athletes, and low-risk athletes. GSE scores were then converted using the POMP metric, allowing comparisons to be made with the current study. Extreme risk athlete's mean score

converted to 77.72%; high risk 71.47%; low risk 70.88%, which are not significantly different.

The mean score in the current study converted to 83%, suggesting that participants in the current study were higher in GSE than all three groups in the Slinger and Rudestam (1997) study.

In addition to GSE, specific PSE was assessed. The mean PSE score was 68.85 (SD = 9.66). While this scale was chosen due to high internal consistency in previous studies, means were not reported. Furthermore, no other studies were identified as using the PSE subscale of the SDQ-3. Thus, conclusions cannot be drawn regarding whether participants of EOCs are higher in PSE than non-participants. In order to draw comparisons, the Physical Self-Description Questionnaire (PSDQ), designed by the same author, was selected. Importantly, the scale was much longer (70 items) and has been largely administered to children and adolescents; however it was also tested among a sample of elite athletes and adolescents at a non-athletic school (Marsh, Hey, Roche & Perry, 1997). The POMP metric was used to convert mean scores on the PSDQ from both the elite athlete group and the non-athletic group, in order to draw comparisons to the current sample's scores on the PSE subscale of the SDQ-3. Elite athletes scored 77.53%, whereas students from the non-sport school scored 68.55%. The current study sample scored a mean of 84.07%, appearing somewhat higher compared to these two groups.

Hypothesis 3: Individual difference variables will be higher among those who participate in more EOCs. In order to test this hypothesis, E, O, GSE, and PSE were entered into a correlation analysis with number of EOCs (see Table 2). The correlation between PSE and number of EOCs was marginally significant; no other relationships were significant.

As the IDVs are all highly correlated, a hierarchical multiple regression was conducted in order to assess the unique contribution of each IDV on number of EOCs run. Because income, age, and number of marathons run were significantly related to number of EOCs, these three

variables were entered into the regression first (Block 1), followed by all four of the IDVs (Block 2). IDVs were entered in the order of E, O, GSE, and PSE. Results indicated that none of the variables were predictive of the number of EOCs run². See Table 3.

Why People Participate in EOCs

Hypothesis 4: People participate in EOCs for intrinsic reasons. Next, this study was interested in examining why people participate in EOCs. Motivation frequencies are broken down by the number of EOCs people ran (see Table 4). Additionally, as people were allowed to select more than one reason, reason combination frequencies are broken down by number of EOCs in Table 5. Of the reasons why people participated, fun was the most often cited reason (N=42). When analyzed by the collapsed, broader categories of motivation, the majority of people participated for exclusively intrinsic reasons (N=37), followed by both intrinsic and extrinsic reasons (N=16); only 4 participants reported participating solely for extrinsic reasons.

Chi-square analyses were conducted to determine whether selected reasons for running were related to each other. Results revealed a significant relationship between those who were motivated by their friends, and those motivated by previous experiences, $\chi^2(1, N=58) = 4.39$, $p < .05$, and between those who were motivated by fun, and those who were motivated by challenge, $\chi^2(1, N=58) = 13.85$, $p < .001$. To assess where the differences were, adjusted standardized residuals were calculated. If there were no significant difference between any of the groups (e.g., if $p > .05$) then the adjusted standardized residuals would fall within a range of + or - 1.96 (IBM Support, 2014). In the relationship between selection of friends, and selection of previous, the adjusted standardized residuals were 2.1, and in the positive direction, indicating

² When run without controlling for demographics, results indicated that PSE contributed towards number of EOCs run, such that higher PSE scores were predictive of running more EOCs, $\beta = .31$, $p < .05$

that individuals who selected friends were more likely to also select previous. In the case of fun and challenge, the adjusted standardized residuals were 3.7, and in the negative direction, indicating that people who selected fun were less likely to also select challenge. No other relationships between motivations were found.

In order to determine whether there were mean differences in the number of races people ran within each motivation category, a series of t-tests were conducted. First, the broader motivation categories of intrinsic, extrinsic, or both intrinsic and extrinsic were analyzed. No mean differences were found in number of races run within any of the motivation categories.

Next, motivation was analyzed within each specific reason why. Results showed that participants who selected fun ran fewer races than those who did not select fun, $t(50.86)=2.80$, $p<.01$, $M_{\text{Yes-Fun}}=2.14$ (1.20), $M_{\text{No-Fun}}=2.80$ (.56). Participants who selected challenge ran more races, on average, than those who did not endorse challenge as a reason, $t(24.07)=-2.24$, $p<.05$, $M_{\text{Yes-Challenge}}=2.80$ (.63), $M_{\text{No-Challenge}}=2.21$ (1.16). See Figure 1. There were no other significant mean differences in number of races run within reasons for participating. In order to assess whether there were differences in number of EOCs run across motivations, an ANOVA was conducted. No significant differences were found.

Interactions Between Who and Why

Although not among the specific hypotheses of this study, demographics were analyzed in relation to reasons why people participate in EOCs, as the underlying goal of this study was to examine who participates in EOCs and why. A chi-square analysis revealed that men were significantly less likely to endorse previous as a reason to participate compared to women, $\chi^2(1, N=56)=4.74$, $p<.05$. Gender differences were not found among the broad motivation categories (e.g., intrinsic motivation), nor were they found among the other specific reasons to participate.

A chi-square analysis revealed a significant relationship between income and extrinsic motivation, $\chi^2(4, N=56)=10.77, p<.05$. To examine where the significant difference was in the relationship, adjusted standardized residuals were calculated. Individuals in the \$70,000-100,000 income bracket had an adjusted standardized residual of 3.3, which falls outside of the normal distribution of + or - 1.96, indicating that significantly more individuals in this income bracket were extrinsically motivated as compared to the expected normal frequency. A t-test revealed significant differences between the average age of participants who were exclusively extrinsically motivated and those who were not, $t(55)=-2.14, p<.05, M_{EM}=45.50, SD=11.21; M_{NotEM}=35.04, SD=9.31$. No differences were found for education levels, ethnicity, or any of the motivation categories.

Hypothesis 5: IDVs will be associated with intrinsic motivation. As the IDVs are correlated with one another, a hierarchical multivariate logistic regression was conducted to provide insight into the unique contribution of each IDV on motivation. In block one, relevant demographic information was entered. Specifically, gender was entered when examining the motivation previous, and income and age were controlled for when examining extrinsic motivations. In block two, IDVs were entered in the order of E, O, GSE, and PSE. As no other motivation reason (e.g., fun) or category (e.g., intrinsic motivation) was related to demographic information, these analyses were conducted as multivariate logistic regressions, and all IDVs were entered into block one. E was found to be positively associated with intrinsic motivation, $OR=2.21, 95\% CI [1.02, 4.76]$, and negatively associated with both intrinsic and extrinsic motivation, $OR=.39, 95\% CI [.17, .90]$. No other significant associations between IDVs and motivation were found³ (see Tables 6 and 7).

³ Results did not differ whether run with or without relevant demographic variables.

Hypothesis 6: IDVs moderate the IM-EOC relationship. Lastly, in order to test whether IDVs moderated the impact of ‘intrinsic motivation’ on the number of EOCs run, four separate hierarchical regressions were conducted (one for each IDV), controlling for associated demographics. First, interaction variables were created for each IDV by standardizing the IDV and multiplying it by intrinsic motivation.

Each variable was then entered into the equation separately following the procedures described in Baron and Kenny (1986). First, income and age were entered into the equation, as they were associated with the number of EOCs run (block one). The number of marathons participants previously ran was entered on block two. Then, intrinsic motivation was entered (block three), followed by the IDV (e.g., E) (block four). Finally, the interaction variable was entered (block four). Thus, the predictive value of intrinsic motivation on number of EOCs (above and beyond that of the demographic information and marathon-related information) was determined (steps 1 and 2, respectively), then intrinsic motivation on number of EOCs when accounting for the IDV, and the predictive value of the IDV when accounting for intrinsic motivation (step 3). Finally, the predictive value of the interaction of intrinsic motivation and the IDV on the number of EOCs was determined (step 3). None of the analyses were significant. Given the small sample size, the hierarchical regression was run again without the demographics to preserve power. The results remained the same (see Table 8).

Discussion

This study sought to examine who participates in EOCs, and why. Participants in this study were either interested in or had already participated in extreme obstacle courses, with the majority having run three or more EOCs.

Who runs Obstacle Courses?

Demographics. Those who agreed to be in the study were mostly male, European or European-American, and mostly in the upper socioeconomic (SES) bracket (college educated and made over \$100,000 a year). Furthermore, most participants played a team sport in high school or college, suggesting that these events appeal towards an athletic demographic. These findings corroborated expectations. With the cost of entry to these events, and with a heavy corporate presence, extreme obstacle courses seem to lend themselves to white men of upper SES.

Individual Differences and EOCs. This study also looked at individual differences among those who participate in EOCs. Specifically, extraversion, openness, general self-efficacy, and physical self-efficacy were examined among those interested in, or who had already participated in, these events.

For the purpose of comparison, normative samples from previous studies were identified. Participants were compared to community samples, as well as extreme athlete samples, in order to develop a greater sense of who participates in EOCs. Compared to community samples, participants in the current study were higher in extraversion, and marginally higher on openness, suggesting that participants of extreme obstacle courses may be seeking more arousing and novel experiences relative to those not interested in participating. This parallels the pattern of higher extraversion and openness in those interested in other extreme sports (Tok, 2011). However, compared to high-risk, non-risk, and non-athlete samples from previous studies, extraversion and openness appeared similar to the non-athlete participants, and lower than both athlete groups (Kajtna et al., 2004). One possible explanation may be due to differences between EOCs and other extreme sports. Participants of EOCs may not view themselves as athletes in the same way that participants of other extreme sports might. These events are largely weekend-only, and may

attract a crowd of people who participate because they find the events fun, rather than because they view themselves as athletes in a sporting competition. Indeed, the finding that most people were motivated to participate in EOCs because they seem like fun supports this explanation. Participants may view EOCs as a recreational activity, and thus may not view themselves as athletes, supporting the comparison made between the current sample and the non-athlete participants of the Kajtna et al. (2004) study.

Importantly, the non-risk sample from the Kajtna et al. (2004) study consisted of sports that varied in terms of risk. Some sports that were considered non-risk were sailing, slalom skiing, and sport climbing, which indeed still involve a degree of risk. In fact, scores on openness and extraversion were not different among the non-risk and high-risk groups, suggesting that, despite being labeled as non-risk, both activities may actually have been perceived by participants as risky, perhaps riskier than EOCs. Future studies should examine the risk perception involved in participating in EOCs, in order to determine the risk level in which these activities could be categorized.

Participants were no different than the student sample on general self-efficacy using the same scale, but were higher than a community sample using a different self-efficacy scale, and higher than both athlete groups in a comparison study (Slanger and Rudestam, 1997), indicating that general self-efficacy differed in the expected direction from non-EOC participants. This makes sense, as general self-efficacy has been hypothesized to be associated with high risk taking behavior due to feelings of capability and perception of difficult situations as challenges to overcome (Bandura, 1997).

Regarding physical self-efficacy, comparisons could not be made using a normative sample with the same scale, however, mean scores on a similar but longer assessment were

available for a college-age elite athlete sample, and from a non-athlete high school sample (Marsh et al., 1997). Compared to both the elite athlete and non-athlete groups, the physical self-efficacy levels in the present sample appeared higher.

One possible explanation for why physical self-efficacy among EOC participants was higher than those of the comparison groups could be age differences. The average age of participants in the current sample was 36; compared to a study of college-age athletes (average age 21 years), or high school students (average age 13.5 years), it is possible that the maturity levels of the participants in the current study were predominantly responsible for the higher physical self-efficacy scores. Older participants may have more experience and a greater understanding of what they are physically capable of, as compared to high school or college students who may be less aware of their physical abilities. Consequently, this could lead to older participants having higher physical self-efficacy.

A second possibility is that, although this study has largely assumed that individual characteristics predict participation, perhaps participation in EOCs actually leads to higher physical self-efficacy. As most participants in this study participated in more than one EOC, it could be that they nurtured and developed a stronger sense of physical self-efficacy through continued participation. This possibility is corroborated by the marginally significant, positive relationship found between physical self-efficacy and number of EOCs run.

Results from the current study failed to show a significant relationship between extraversion, openness, or general self-efficacy, and number of EOCs run. The lack of significant correlation between these individual difference variables and number of EOCs may be due to several possibilities. Interestingly, none of the literature that examined these variables among extreme sports participants studied whether fluctuations in individual difference variables were

related to the frequency of participation. Previous studies predominantly explored mean differences in extraversion, openness, and general self-efficacy between sports of different risk-levels. Thus, with no evidence that there is a relation between these variables and frequency of participation, it could be that rather than being directly related to continuing participation, individual difference variables are related to greater interest in or initial participation in extreme sports. It may be that the differences in personality relative to participation in EOCs occurs only between those who are interested in participating, and those who are not interested.

The other possibility may simply be that this study had too small a sample size to detect any significant correlations. Perhaps had the sample size been larger, this study would have had enough power to find significant correlations.

In examining who participates, there were several notable limitations to consider. First, in all comparisons with other studies, statistical analyses were not conducted. This was because a comparison across studies would require a meta-analysis (Cohen, 2008), which was beyond the scope of the current study. Therefore, it remains unexamined whether the difference between the current sample's scores on individual difference variables are significantly different than those of the comparison studies. Future research should statistically analyze whether participants are higher in these individual difference variables compared to a non-EOC participant sample.

This brings up a second limitation of the study: the failure to recruit a non-EOC comparison group. During the recruitment process, only those who were interested in or had participated in EOCs were eligible for the study. While this was initially thought to be necessary in order to observe the characteristics of this group, in hindsight it would have been beneficial to also include a comparison group of non-EOC participants. It is possible that EOC participants may have been included in the normative comparison groups, thereby possibly inflating the

range of normalcy, and dampening any apparent differences between the current and comparison samples.

In all comparisons to other studies using a different scale, the POMP metric was used to convert scores into a percentage of their total maximum possible score, making the units comparable. However, the POMP metric does not account for any inherent differences in the scales themselves, and so while studies were chosen that suggested they measured the same constructs, different questions or aspects of the IDVs may have been highlighted in the different scales, and some scales may have been more comprehensive, thereby slightly changing what specifically was measured in each scale.

Finally, there could have been sampling error involved that may have influenced the results regarding how many races individuals ran, as well as the profiles of individuals who participate. In recruiting participants, this study relied heavily on social media, and targeted Facebook groups for each of the EOCs, as well as general groups such as ‘All Things Obstacle Racing’ and ‘Extreme Obstacle Course Runners, LLC’. People who join these groups may be avid participants of EOCs, whereas individuals who are simply curious, interested, or who have only participated in one or two may be less likely to join EOC-oriented groups. In turn, this may have led to a very one-dimensional view of what EOC participants look like. Other studies should look to recruit at the actual event sites, as well as at registration locations, in order to reach participants who are not involved in Facebook EOC-related groups.

Why People Participate in EOCs

The second purpose of this study was to examine why people participate in EOCs. This is a question of motivation. Most people in this study were intrinsically motivated to run EOCs, and the most oft-cited reason for participating was that participants thought EOCs seemed fun.

Interestingly, those who were motivated by a need to challenge themselves ran more races on average than those who were not motivated by challenge, suggesting that while fun was the most common reason, challenge may have been a greater driving force.

Among the reasons why people participated in EOCs, a negative relationship emerged between selecting fun and selecting challenge, and a positive relationship emerged between selecting friends and previous. This suggests that individuals who were motivated by a desire to have fun were less likely to also be motivated by a desire to challenge themselves, and vice versa. Conversely, individuals who were motivated by their friends were more likely to also be motivated by previous experiences, as compared to other individuals.

The relationship between selecting fun versus selecting challenge may be a result of how people experience the courses. Perhaps people who are motivated by fun do not experience the course as challenging, either because they are strong enough athletes for whom the course is not difficult, or perhaps because they do not push themselves in the same way that those looking for a challenge may. Specifically, those racing for fun may be the same individuals who are participating with the goal of simply completing the race, rather than racing for time. Conversely, perhaps people who are motivated by a need for challenge view these courses as an opportunity to prove themselves, which is not necessarily a fun experience, though it could be a rewarding one. Thus, if people are experiencing the courses differently, they are likely motivated to participate for different reasons.

The positive relationship between being motivated by friends, and previous experience, may have several possible explanations. One possibility is that participants who previously participated in similar races have developed a core group of friends that they participate with, and that this group may participate together. Thus, both friends and previous experiences may

motivate people to participate. Additionally, self-impression management would suggest that there may be pressure from friends to maintain one's identity as a person who runs EOCs, thus leading participants to select both friends and previous experience as motivating factors.

Interestingly, there was a gender difference among individuals who were motivated by previous experience, wherein women were more likely to cite previous experience as a motivating factor than men. It could be that women feel a greater sense of pressure to maintain their image, and studies have shown that women are more susceptible to conformity than their male counterparts (Eagly & Chivala, 1986), thereby possibly leading to a greater association between friends and previous for women.

Intersection of Who and Why

Demographics and motivation. In addition to the relationship between gender and motivation due to previous experience, several other demographic-motivation relations emerged in this study. Mean differences were found in the relationship between age and extrinsic motivation, where the mean age of those who were exclusively extrinsically motivated was significantly older than those who were not exclusively extrinsically motivated. As income was also associated with extrinsic motivation, indicating that participants who fell in the \$70,000-100,000 income bracket were more likely to be extrinsically motivated, it could be that those who fell within this income bracket were older than those who fell below this income bracket. This is corroborated by a highly significant, positive correlation between age and income. Age was also positively associated with the number of EOCs people ran. This could be interpreted in several ways. First, since the results also indicate that income is positively related to number of EOCs, it is possible that older participants make more money, and thus may be more able to afford to participate in these events repeatedly. Another possibility is that older participants may

use these events as a way to overcome or process a “midlife crisis”. These events may provide older individuals with an opportunity to feel youthful, or to prove to themselves that despite growing older, they are still capable of the same physical feats as those younger than them. In turn, social cognitive theory (Bandura, 1978) would suggest that if the experience is rewarding enough, participants may associate the positive feeling with the event, thus encouraging them to participate more often, thereby possibly explaining why age is positively associated the number of EOCs run.

The association between income and extrinsic motivation could suggest that participants in this income bracket may be the same participants recruited through work-related outings. As previously discussed, corporations are known to bring large groups to these events, and white-collared professionals are a key demographic of EOCs. Subsequently, these participants may feel pressure from their coworkers or bosses to conform to work-related norms, such as participating in work events, including EOCs, thereby leading to an association between participants in this income bracket and extrinsic motivation.

IDVs and motivation. Among the individual difference variables, extraversion was related to intrinsic motivation, suggesting that people who are more extroverted may be more adventurous and thus may seek out EOCs because they are looking for the fun or challenge that comes with these events. Extraversion was negatively related to being both intrinsically and extrinsically motivated, suggesting that those who scored high in extraversion were less likely to be motivated to participate because of a combination of friends and fun. At first this seems counter-intuitive due to the social nature of extraverts; however, it could be that those high in extraversion are not motivated by their friends because they are the ones motivating others to participate. This is supported by the description of extraverts as excitement-seeking and

adventurous, active and energetic, and assertive, or even somewhat forceful (John & Srivastava, 1999). Furthermore, given the characteristics of extraverts, behaviorally they tend to be leaders of their groups, and are likely to be the individuals who organize projects or outings (John, Naumann, & Soto, 2008). The scale used to assess extraversion in this study was eight questions, six of which assessed energy, assertiveness, ability to generate enthusiasm, and outgoing social behaviors. All of these behaviors may contribute towards effective leadership, especially in regards to organizing and motivating a team to participate in an EOC. Thus, while less extraverted individuals may feel compelled to go along with the group, more extraverted people may feel a greater sense of autonomy, and they may be the individuals driving their team to participate, thereby leading them to be intrinsically motivated to participate because they view EOCs as fun or challenging.

Openness, general, and physical self-efficacy were not related to intrinsic motivation in this sample. One possible explanation is that, due to the small sample size, this study failed to achieve enough power to detect reliable results among these characteristics and intrinsic motivation. A second explanation could be that openness is not related to an intrinsic desire to participate in these thrill-seeking activities. Indeed, in observing the means of the participants in this study, participants appeared only marginally more open relative to comparison community samples, and less open than participants of other extreme sports, suggesting that this individual difference variable may not be related to participation in EOCs.

Openness describes a desire to learn and stimulate the mind (John, Naumann, & Soto, 2008), and the studies that found it to be higher among extreme sports participants were observing sports such as surfing (Diehm and Aramtas, 2004), scuba diving, and rock climbing (Tok, 2011). These sports may all be more mentally stimulating than EOCs, and in turn may be

more intrinsically interesting to participants high in openness; however, as none of these studies examined the relationship between openness and motivation, this is all speculation. As EOCs are more adventurous and physically stimulating, but perhaps lack the mind-expanding qualities of other extreme sports, maybe a different quality, such as Thrill and Adventure Seeking (a subscale of the Zuckerman Sensation Seeking Scale) would be predictive of intrinsic motivation.

General and physical self-efficacy were also not related to intrinsic motivation. This was surprising, as self-efficacy is directly associated with motivation through goal-setting, perseverance, and resilience to failure (Bandura, 1993). These qualities are reflective of feelings of competence, which, according to the self-determination theory, is required for intrinsic motivation (Ryan and Deci, 2000). However, Ryan and Deci (2000) also state that feelings of competence alone are not enough to lead to intrinsic motivation. In fact, despite being highly self-efficacious and competent, if an individual lacks a sense of autonomy over their actions, they will not be intrinsically motivated. Thus, perhaps feelings of self-efficacy were not predictive of intrinsic motivation because they may not have been consistently paired with feelings of autonomy, a construct that this study did not examine.

Lastly, this study hypothesized that all four individual difference variables would moderate the relationship between intrinsic motivation and number of EOCs run. Hierarchical regressions did not support this hypothesis. It is possible that these variables do not interact with motivation to explain number of races run. However, it could also be that the sample size was too small to find significant results. Testing interactions often require large sample sizes to have the power to detect reliable effects (McClelland & Judd, 1993).

Indeed, a small sample size was one of the greatest limits of the study overall. The consequent lack of power resulting from the small sample may have prevented the moderation

analysis from detecting significance, as well as correlations between individual difference variables and number of EOCs run. Physical self-efficacy, for example, was significantly correlated to the number of EOCs run prior to controlling for demographic variables, but after the additional variables, this relationship became only marginally significant. Perhaps had the sample size been larger, this relationship would have remained significant, and possibly even become more significant. Therefore, there may not have been enough power to detect reliable results, suggesting that while this study found many insignificant results, a larger study may have produced a different outcome.

Furthermore, many participants failed to answer all of the questions, especially in regard to demographic and EOC-related information. For example, with so few participants sharing information on their ethnicity, ethnicity had to be collapsed into two categories. This prevented analyses of individual ethnicities in relation to other variables. A larger sample size would have provided the study with more expansive demographic information, perhaps allowing for more detailed analyses to be conducted.

Another limitation of this study was the cross-sectional design. The purpose of this study was to investigate who participates and why, suggesting that the individual difference variables predict the number of EOCs in which people participate. However, the directionality of these relations cannot be assumed. Future studies should employ a longitudinal design to determine whether individual difference characteristics predict the number of EOCs people run, whether number of EOCs run influences the individual difference characteristics, or whether the relationship is bidirectional.

Furthermore, in assessing why people participate in EOCs had to do with the design of motivation assessment. In giving participants options for why they ran, two potential problems

occurred. First, regarding the frequency of those who were intrinsically motivated, two of the four options given (“because they seem fun” and “I have run similar races in the past, so this was another opportunity to exert myself”) were coded as intrinsic. The latter option, labeled ‘previous’, was actually designed as an attempt to capture integrated-extrinsic motivation, but during analyses was thought to have possibly been misinterpreted as ‘challenge’, especially given that this was not among the given options. Thus, as integrated-extrinsic motivation is more highly autonomous and very near intrinsic motivation, it was decided to code ‘previous’ as intrinsic motivation. Additionally, when specific responses to “other” were analyzed, they were recoded as challenge, and challenge was then included in the intrinsic motivation category. Thus, three of the four options from which participants could select were intrinsic, whereas only one of the four options was specifically extrinsic (“friends”), thereby potentially influencing the likelihood that participants select an intrinsic motivation.

The second problem is that challenge was not included in the given list of motivations, but rather was self-generated. Had challenge been among the reasons to select from, perhaps more people who selected fun would also have selected challenge, potentially reducing or negating the significance of the relationship between challenge and number of EOCs run or even possibly reversing the negative relationship between fun and number of EOCs run.

Another possibility is that the majority of those interested in EOCs or who have run EOCs may actually want to participate for both fun and challenge, but because challenge was not listed among the reasons, participants may not have thought of it, thereby potentially presenting an inaccurate picture of why people get involved with EOCs. It follows that perhaps the nature of survey-taking is to select among the given options, and thus participants may fail to consider entering in their own responses, even when the option to do so is available. Future research

might allow all motivations to be self-generated, as providing a list of options may cause participants to feel limited in their ability to express their thoughts, as well as may lead participants to select options because they are there, even if they are not truly motivating factors. However, if providing a list of motivations is necessary, future studies should be sure that the list of motivations has an equal number of intrinsic and extrinsic possibilities.

Future studies of EOCs should also consider developing a specific EOC self-efficacy scale. In exploring physical self-efficacy among other extreme sports, it was found that some sports, such as rock climbing, developed specific climbing self-efficacy scales, that more directly assessed participants self-efficacy in their chosen sport. Thus, while physical self-efficacy was correlated with greater participation in these events, an EOC self-efficacy scale may more accurately depict this relationship.

Despite the limitations of this study, it did have several strengths. First, it served as preliminary research on an otherwise unexamined population. This is particularly important, as the number of people who participate in EOCs has been rapidly growing over the past several years, and these events have become an international phenomenon. Second, this study identified some key demographic information regarding who participates in EOCs. This information, in turn, may help guide what future studies look for among the EOC population. Specifically, information regarding the age and SES of participants may be helpful in terms of examining more closely the reasons participants run.

This study also successfully showed that physical self-efficacy was related to the number of EOCs participants ran. While the cross-sectional design limits the interpretation of that relationship, this finding pinpoints a direction for future research. Furthermore, in examining why the other individual difference variables of interest were not shown to be related to

participation, sensation seeking, and more specifically thrill and adventure seeking, was identified as a future variable to examine.

Regarding why people participate, this study showed that most people run EOCs for intrinsically motivating reasons, suggesting that perhaps these courses are fulfilling the three basic psychological needs, identified by Ryan and Deci (2000) in the self-determination theory as autonomy, competence, and relatedness. Indeed, although this study did not examine these three constructs individually, it did find that physical self-efficacy was marginally related to intrinsic motivation. As self-efficacy and competence are similar constructs (Ryan and Deci, 2000), this is suggestive that, at least among those high in physical self-efficacy, EOCs may fulfill these basic needs. This population may therefore be important for further theory testing and theory building. Indeed, the fulfillment of these needs leads to many other positive outcomes, such as the facilitation of personal growth, social development, and well-being (Ryan & Deci, 2000), which can be examined in a sample of EOC participants.

Furthermore, this study found that within the intrinsic motivation category reasons why people are interested in running EOCs differ, suggesting that these courses serve people differently. This is important information, indicating that perhaps people can create their own experiences within the context of EOCs, (e.g., fun, challenge, bonding with friends or coworkers). Future research should examine the utility of these courses in different populations, to determine whether they serve to benefit people differently, depending on their needs.

Finally, this study could serve as a pilot for a larger, longitudinal exploration of who participates in EOCs and why. The flaws identified in this study are easily remedied with a greater variety of recruitment strategies, inclusion of a non-EOC comparison group, a more careful selection of measures, and a larger overall number of participants.

Conclusion

This is the first known study to examine who participates in EOCs and why. The significance of this research is that it attempted to examine the interaction between individual difference variables and elements of self-determination theory among participants of a relatively recent extreme sport phenomenon. Through gaining a better understanding of who participates in EOCs, and whether these courses fulfill their basic psychological needs, it is possible to assess whether participation in these courses may lead to greater psychological growth and well-being.

In understanding why people participate, there is a sense of what they may gain from the experience. For example, people who participate for fun may experience joy or interest throughout the event; people who participate for challenge may experience pride in their accomplishments. According to the broaden and build theory (Fredrickson, 2000), experiencing positive emotions opens people up to experience more positive emotions and leads them to behave in ways that attract positive experiences. Additionally, people can develop a reserve of positive emotions from which they may draw later, ultimately increasing their resilience, leading to improved psychological health. Thus, if EOCs provide participants with positive experiences, it may lead to an upward spiral of positivity.

In considering the possible applications of EOCs towards improving health and well-being, the potential is vast. EOCs could be implemented in school settings, work environments, or even modified for use among those with serious illness. If EOCs are found to further develop individual difference variables such as general and physical self-efficacy, or even improve well-being, then targeting populations that may benefit from growth in these areas is an important and exciting direction for future research and application.

In examining the role that EOCs may play in increasing fitness among the population, through learning whether certain personality types or individual characteristics are associated with participating, and examining what motivating factors are associated with repeated participation, it may be possible to determine for whom these courses may be a pathway towards a healthier, more active future. By introducing people who may have a positive experience in EOCs to this form of activity, it may help show them what they are physically capable of, and motivate them to take care of themselves. Furthermore, if they have a good experience, they may be motivated to continue to run EOCs, and may develop friendships out of these events. Given the global obesity problem, this could potentially assist in increasing exercise and healthy living among not only the general population, but also the overweight and obese.

These events have the potential to be pivotal experiences regarding not only how people view and treat their bodies, but in how people experience their surroundings and approach their lives. By learning who has positive experiences by participating in these events, it becomes possible to identify and recruit more people who may benefit from these events, facilitating their growth of positive emotions, which can ultimately improve their mental and physical well-being.

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Appendix A

Snowball Technique Script: Word of Mouth/Email

Part 1.

Email (to the people we know):

A. PI:

Hi (name of person we know),

As you probably know I am working hard to graduate this year and am putting together my thesis project. For that project I am studying the factors involved in running extreme obstacle races. I know that you have run them or are interested in running them, and wondered if you would like to participate in my study. Also, would you be willing to recommend others you know who would like to participate? I could send them an email explaining the study if you send me their email addresses, or if you do not feel comfortable with that, you could forward the message below on my behalf.

Thank you!

Stephanie Kronenberg

B. Advisor

Hi (name of person we know),

My student is conducting a study as part of her masters' thesis on the psychology of running obstacle races. I know you have run them or are interested in running them and wondered if you would like to participate in her study. Also if you could recommend others who would like to participate we can send them an email if you send me their addresses or if you do not feel comfortable with that, you can forward the message below on our behalf.

Thank you!

signature

Part 2:

Email (To the people who are recommended to us)

Hi [*Potential Participant's Name*],

[*Contact's Name*] suggested that you have or are interested in participating in an upcoming obstacle course race and that you might be interested in being a part of my study.

I am a graduate psychology student at the City University of New York—City College, and my thesis study examines the factors that are involved in participating in extreme obstacle courses. All you'll need to do is visit this link [*link to questionnaire*], and fill out the questionnaire anytime prior to your race. The survey takes approximately 15 minutes to complete. Then there will be two more questionnaires to complete following your participation in the race, also taking only about 15minutes each. One will be sent to you 72 hours after your race, and the third a month after the race.

There is more information about the study when you click on the link provided, and of course, feel free to email me if you have any other questions.

Your participation in this study is greatly appreciated, and I hope you enjoy your race!

Sincerely,

Stephanie Kronenberg, City College of New York

Part 3

In person to people we know, but do not have email addresses for (PI only):

PI: Hi (name of person I know), I know you're interested in extreme obstacle courses. I'm doing my Masters' thesis on the psychology of running them, and was wondering if you would be interested in being a part of my research. If so, I would love to send you an email (email Part 2—see above) with a bit more information about my study. Would you be willing to give me your email so I could send you the information? Thanks so much!

Appendix B

Social Media Script

Are you participating in an extreme obstacle course like Tough Mudder or Spartan Race between now and March? If so, this questionnaire is for you!

We are studying what psychological factors are involved in participating in these events, and participating in this study only involves filling out three brief surveys.

Just visit the link below and fill out the first survey prior to your race. Then we'll send you two more surveys to fill out once you've completed your race.

https://ccnypsych.az1.qualtrics.com/SE/?SID=SV_9RXXekgoAijkWgd
For more information, just click on the link provided.

We really appreciate your interest and participation in our research. We can't do it without you!

Have a great race!

Stephanie Kronenberg, Graduate Student
City College of New York

Appendix C

Sports and Physical Abilities section of Self Description Questionnaire III (SDQ3; Marsh & O'Neill, 1984)

Rate each item on a scale from 1 (definitely false) to 8 (definitely true)

1. I am a good athlete
2. I am awkward and poorly coordinated at most sports and physical activities
3. I have good endurance and stamina in sports and physical activities
4. I hate sports and physical activities
5. I have a high energy level in sports and physical activities
6. I'm not very good at any activities that require physical ability and coordination
7. I like to exercise vigorously at sports and/or physical activities
8. I am poor at most sports and physical activities
9. I enjoy sports and physical activities
10. I am a sedentary type who avoids physical activity

New General Self Efficacy Scale (Chen et al, 2001)

Rate each item on a scale from 1 (strongly disagree) to 5 (strongly agree)

1. I will be able to achieve most of the goals that I have set for myself
2. When facing difficult tasks, I am certain that I will accomplish them
3. In general, I think that I can obtain outcomes that are important to me
4. I believe I can succeed at most any endeavor to which I set my mind
5. I will be able to successfully overcome many challenges
6. I am confident that I can perform effectively on many tasks
7. Compared to other people, I can do most tasks very well
8. Even when things are tough, I can perform quite well.

Openness to Experience Scale of Big Five Inventory (BFI; John & Srivastava, 1999)

Rate each item from 1 (disagree strongly) to 5 (agree strongly)

"I see myself as someone who..."

1. Is original, comes up with new ideas
2. Is curious about many different things
3. Is ingenious, a deep thinker
4. Has an active imagination
5. Is inventive
6. Values artistic, aesthetic experiences
7. Prefers work that is routine
8. Likes to reflect, play with ideas
9. Has few artistic interests
10. Is sophisticated in art, music, or literature

Extroversion Scale of Big Five Inventory (BFI; John & Srivastava, 1999)

Rate each item from 1 (disagree strongly) to 5 (agree strongly)

"I see myself as someone who..."

1. Is talkative

2. Is reserved
3. Is full of energy
4. Generates a lot of enthusiasm
5. Tends to be quiet
6. Has an assertive personality
7. Is sometimes shy, inhibited
8. Is outgoing, sociable

Appendix D

Demographic and Race Related Questions:

1. Gender:
 - a. Male
 - b. Female
 - c. Transgender
2. Sexual Orientation:
 - a. Straight
 - b. Gay
 - c. Bisexual
3. Relationship status:
 - a. Married
 - b. Single
 - c. Single but in a committed relationship
 - d. Divorced
 - e. Widowed
4. Do you have kids?
 - a. 1
 - b. 2
 - c. 3+
5. Occupation:
6. What city/ state or province (if applicable) /country were you born in (ex. New York City, NY, USA)?
7. Where do you currently live (City/ State or Province if applicable/ Country)?
8. How long have you lived in your current location?
9. Select the race/ethnicity you identify with (check all that apply):
 - a. Hispanic/Latino
 - b. Non Hispanic/Latino
 - c. European/European-American
 - d. African/African-American
 - e. Asian/Asian American
 - f. American Indian or Alaska Native
 - g. Native Hawaiian or Other Pacific Islander
 - h. Middle Eastern
 - i. Multi-Racial (please specify)
10. What is your household income?
 - a. Under \$14,999
 - b. 15,000-34,999
 - c. 35,000-70,000
 - d. 70,000-100,000
 - e. Over 100,000
11. How many people are income earners in your household?
 - a. 1

- b. 2
 - c. 3
 - d. 4+
12. What is the highest level of education you have completed?
- a. Some high school
 - b. High School diploma or GED
 - c. Some college
 - d. College graduate
 - e. Some Graduate school
 - f. Graduate school degree (ex. MA, JD, MD, PhD)
 - g. Post graduate school (residency, post-doc)
13. Have you participated in an extreme obstacle course before? Y/N
14. If yes, when?
15. Did you train? Y/N
16. Did you race as part of a team? Y/N
17. Did you finish with your team? Y/N
18. If no, why not?
19. Have you participated in a marathon event or triathlon before? Y/N
20. If yes, which event and when?
21. Have you ever played a team sport competitively? Y/N
22. What sport and when?
23. Why do you want to run/ did you run an extreme obstacle course? Select all that apply:
- a. My friends run them
 - b. They seem like fun
 - c. I have run in similar races in the past, so this is another opportunity to exert myself
 - d. Other (list)
24. Are you currently signed up for a race? Y/N
25. If yes, which race and when?
26. Are you signed up as part of a team? Y/N

Table 1

Demographics of Participants According to Number of EOCs Run

Characteristic	Number of EOCs									
	0		1		2		3 or more		Total	
	N	%	N	%	N	%	N	%	N	%
Gender									55	100
Male	3	8.57	3	8.57	4	14.29	25	71.43	35	63.63
Female	4	20	1	5	3	15	12	65	20	36.36
Education									55	100
HSD or GED	1	25	0	0	0	0	3	75	4	7.27
Some College	3	33.33	0	0	2	22.22	4	44.44	9	16.36
Graduated College	2	8.33	0	0	3	12.5	19	79.17	24	43.64
Some Grad School	1	16.67	2	33.33	1	16.67	2	33.33	6	10.91
Graduate Degree	0	0	2	20	1	10	7	70	10	18.18
Post-Grad Degree	0	0	0	0	0	0	2	100	2	3.64

Table 1 continued

	Number of EOCs										
	0		1		2		3 or more		Total		
	N	%	N	%	N	%	N	%	N	%	
Household Income										55	100
Under \$14,999	0	0	1	25	0	0	3	75	4	7.27	
\$15,000-34,999	2	50	0	0	1	25	1	25	4	7.27	
\$35,000-69,999	2	18.18	2	18.18	2	18.18	5	54.55	11	20	
\$70,000-100,000	3	18.75	0	0	1	6.25	12	75	16	29.10	
Over \$100,000	0	0	1	5	3	15	16	80	20	36.36	
N Income Earners										55	100
1	3	14.29	1	4.76	3	14.29	14	66.67	21	38.18	
2	4	12.12	3	9.09	4	12.12	22	66.67	33	60	
4 or more	0	0	0	0	0	0	1	100	1	1.82	
Relationship status										55	100
Married	3	9.38	0	0	5	15.63	24	75	32	58.18	

Table 1 Continued

	Number of EOCs									
	0		1		2		3 or more		Total	
	N	%	N	%	N	%	N	%	N	%
Single	2	14.29	3	21.43	2	14.29	7	50	14	25.45
Relationship	2	22.22	1	11.11	0	0	6	66.67	9	16.36
Number of children									55	100
0	5	18.52	4	14.81	1	3.70	17	62.96	27	49.09
1	0	0	0	0	4	36.36	7	63.64	11	20
2	2	16.67	0	0	2	16.67	8	66.67	12	21.82
3 or more	0	0	0	0	0	0	5	100	5	9.09
Sexual orientation									55	100
Straight	5	9.62	4	7.69	7	13.46	36	69.23	52	94.55
Gay or Lesbian	1	100	0	0	0	0	0	0	1	1.82
Bisexual	1	50	0	0	0	0	1	50	2	3.64
Ethnicity									44	100

Table 1 Continued

	Number of EOCs									
	0		1		2		3 or more		Total	
	N	%	N	%	N	%	N	%	N	%
Hispanic Latino	2	40	0	0	1	20	2	40	5	11.36
Non Hisp-Latino	0	0	0	0	1	25	3	75	4	9.09
E or E-A	5	14.29	3	8.57	4	11.43	23	65.71	35	79.55
African or Af-A	0	0	0	0	1	100	0	0	1	2.27
Asian or As-A	0	0	0	0	0	0	1	100	1	2.27
A Indian or Al. N	0	0	0	0	0	0	1	100	1	2.27
Multi-Racial	1	20	1	20	1	20	2	40	5	11.36
Played competitive sports									54	100
Yes	6	14.29	3	7.14	7	16.67	26	61.90	42	77.78
No	2	16.67	0	0	0	0	10	83.33	12	22.22
Number of marathons									55	100
0	6	18.18	3	9.09	5	15.15	19	57.58	33	60

Table 1 Continued

	Number of EOCs									
	0		1		2		3 or more		Total	
	N	%	N	%	N	%	N	%	N	%
1	2	18.18	1	9.09	0	0	8	7.27	11	20
2	0	0	0	0	1	25	3	75	4	7.27
3 or more	0	0	0	0	0	0	7	100	7	12.73
Number of triathlons									55	100
0	8	18.18	4	9.09	4	9.09	28	63.64	44	80
1	0	0	0	0	1	20	4	80	5	9.09
3 or more	0	0	0	0	1	16.67	5	83.33	6	10.91

Note. EOC= extreme obstacle course. N Income Earners= number of income earners in household. Relationship= single but in a committed relationship. Non Hisp-Latino= Non Hispanic Latino. E or E-A= European or European-American Af-A=African-American. As-A=Asian American. A Indian or Alaska=American Indian or Alaska Native. Participants were allowed to select more than one race, and thus the total number of participants who filled out the racial demographic questionnaire was 44, but the number of ethnic selections is greater than 44.

Table 2

Correlations Among Demographics, IDVs, and Number of EOCs

	Age	Gender	Marathon	Triathlon	E	O	GSE	PSE	EOC
Age									
Gender	-0.1								
Marathon	.04	.03							
Triathlon	.38*	.01	.21						
E	-0.18	-0.11	-0.09	.08					
O	-0.27*	-0.11	.11	-0.06	0.39**				
GSE	-0.18	-0.9	-0.10	-0.01	0.28*	0.47**			
PSE	-0.11	-0.23	-0.23	.21	0.25*	0.17	0.05		
EOC	0.29*	-0.14	.28*	.21	-0.07	-0.10	-0.12	0.24†	

Note. IDV= individual difference variable. EOC= extreme obstacle course. E= extraversion. O= openness. GSE= general self-efficacy. PSE= physical self-efficacy.

† $p < .10$

* $p < .05$

** $p < .01$

Table 3

Hierarchical Multiple Regression of IDVs on Number of EOCs

	R ²	β
Step 1	0.11	
Age		.26
Income		.11
Step 2	.16	
Past Marathon		.22
Step 2	0.16	
E		0.00
Step 3	0.16	
O		-0.07
Step 4	0.16	
GSE		-0.03
Step 5	0.19	
PSE		0.19

IDV= individual difference variable. EOC= extreme obstacle course. E= extraversion. O= openness. GSE= general self-efficacy. PSE= physical self-efficacy.

Table 4

Frequency of Occurrence of Motivation Selection According to Number of EOCs⁴

Motivation	0 Races	1 Race	2 Races	3+ Races	Total	% of Total
Friends	1	1	4	12	18	33.33
Fun	8	3	6	25	42	77.78
Previous	2	2	1	13	18	33.33
Challenge	0	1	0	9	10	18.52
Intrinsic	7	3	3	24	37	68.52
Extrinsic	0	0	1	3	4	7.41
Both Intrinsic and Extrinsic	1	1	3	11	16	29.63

Note. EOC= extreme obstacle course

⁴ This refers to the total number of times each motivation was selected, regardless of whether it was alone, or selected in addition to other motivations.

Table 5

Frequency of Reason Combinations According to Number of EOCs

Motivation	Number of EOCs				Total	% of Total
	0 Races	1 Race	2 Races	3 or more		
Friends only	0	0	1	2	3	5.56
Fun only	5	0	3	11	19	35.19
Previous only	0	0	0	2	2	3.70
Challenge only	0	1	0	6	7	12.96
Friends + Fun	1	1	2	2	6	11.11
Fun + Previous	2	2	0	2	6	11.11
Fun + Challenge	0	0	0	1	1	1.85
Friends + Fun + Previous	0	0	1	7	8	14.81
Fun + Previous + Challenge	0	0	0	1	1	1.85
Friends + Fun + Previous + Challenge	0	0	0	1	1	1.85
Total	8	4	7	35	54	100

Table 6

Regression of IDVs on Motivation Reasons

Predictor	Motivations							
	Friends		Fun		Previous		Challenge	
	R ²	B	R ²	β	R ²	β	R ²	β
Step 1					.09			
Gender ^a						.30*		
Step 2 ^b	.06		.05		.10		.06	
E		-0.12		0.14		.01		-0.21
O		-0.17		-0.01		-0.05		.20
GSE		.00		.02		-0.01		-0.03
PSE		.18		-0.23		.10		.12

Note. IM= intrinsic motivation. EM= extrinsic motivation. B= both intrinsic and extrinsic motivation. IDV= individual difference variable.

^aGender was controlled for in 'Previous'; no other motivations required controls. Thus, IDVs were entered in at Step 1

^bStep 1 for all motivations except Previous

Table 7

Regression of IDVs on Motivation Categories

Predictor	Motivations					
	IM		EM		Both	
	R ²	B	R ²	β	R ²	β
Step 1			.11			
Age ^a				-0.14*		
Income				.38		
Step 2	.14		.14		.13	
E		0.31*		0.06		-0.36*
O		0.18		-0.12		-0.10
GSE		-0.05		-0.12		.11
PSE		-0.22		0.09		.16

* $p < .05$

^aAge and income were controlled for in EM; no other motivations required controls. Thus, IDVs were entered in at Step 1

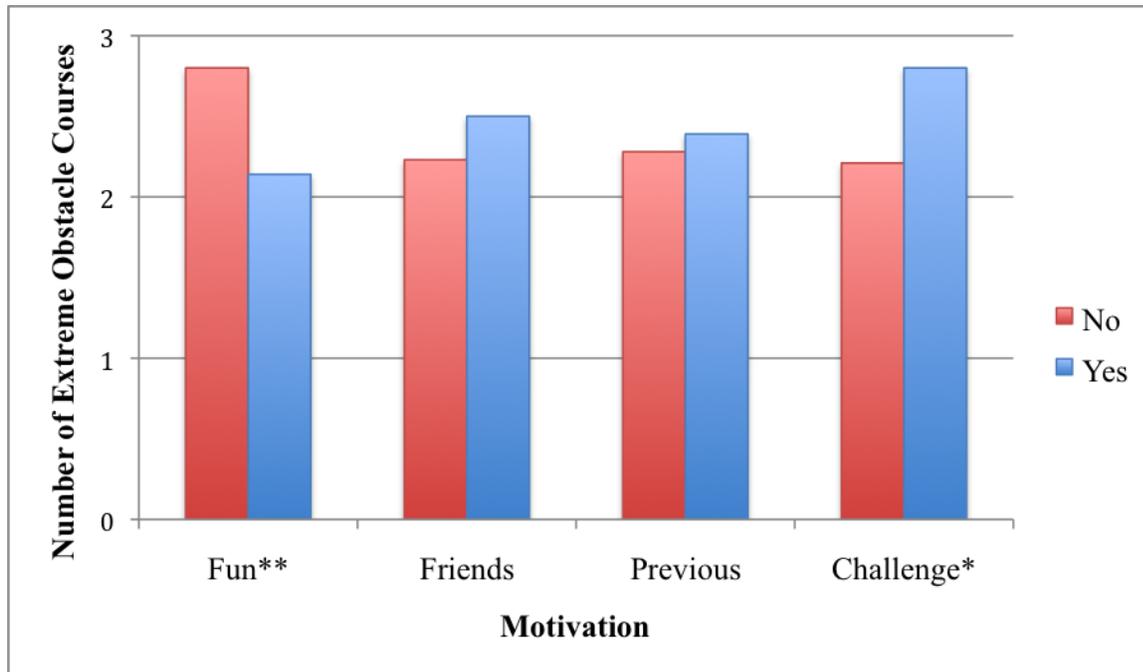
Table 8
Hierarchical Regression Observing Moderating Effects of IDVs on Relation Between IM and Number of EOCs

Variable	Individual Difference Variables							
	Extraversion		Openness		General Self-Efficacy		Physical Self-Efficacy	
	R ²	β	R ²	β	R ²	β	R ²	β
Step 1	.12		.12		.12		.11	
Age		.27 [†]		.26		.27 [†]		.27
Income		.12		.12		.12		.11
Step 2	.17		.16		.17		.16	
Marathon		.22		.21		.22		.23
Step 3	.19		.19		.19		.19	
IM		-0.17		-0.18		-0.17		-0.19
Step 4	.19		.19		.20		.21	
IDV		.03		-0.07		-0.08		.12
Step 5	.19		.19		.20		.23	
IM x IDV		.05		.08		.21		.25

Note. IDV= individual difference variable. IM= intrinsic motivation. EOC= extreme obstacle course.

[†] $p < .10$

Figure 1. Difference between selection of motivations and number of EOCs run.



Note. 'No' and 'Yes' refer to whether participants selected the motivation as a reason why they were motivated to participate in Extreme Obstacle Courses.

* $p < .05$

** $p < .01$

