A Qualitative Examination of Risk Among Elite Adventure Racers

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A substantial amount of research has examined risk taking and sensation seeking in sport, including "extreme" sports (Breivik, 1996; Levenson, 1990; Robinson, 1985; Rossi & Cereatti, 1993; Rudestam & Slanger, 1997; Straub, 1982; Yates, 1992; Zuckerman, 1994). The growing sport of expedition-length adventure racing incorporates activities that previous research has determined to be high in risk, such as mountaineering (Breivik, 1996), kayaking, canoeing (Boga, 1988), white water rafting, and mountain biking (Schneider, 2001). Though Schneider (2001) found that adventure racers score among the highest sensation seekers, very little is known about the experiences of risk taking and sensation seeking among elite level adventure racers. Kay and Laberge (2002) qualitatively examined how adventure racers assign levels of authenticity to different events, including the popular Eco-Challenge event, but their focus was not on the psychological aspects of adventure racing. Therefore, the primary purpose of this study was to qualitatively examine the social and psychological phenomenon of risk in adventure racing. In-depth interviews were conducted with ten world-class Eco-Challenge participants. Following inductive analysis (C™iŽ, Salmela, Baria, & Russell, 1993) five general categories emerged, including: 1) risk socialization, 2) the space of risk, 3) mediators of risk, 4) negotiating/coping with risk, and 5) sensations. These themes are discussed at length, and connected to previous research on risk-taking and sport. Finally, suggestions for future research on risk and adventure racing are proposed.

Address Correspondence To: Ted M. Butryn, Ph.D., Department of Kinesiology, San José State University, One Washington Square, San José, CA 95192-0054, (408) 924-3068, tbutryn1@kin.sjsu.edu

A substantial amount of research has addressed risk taking and sensation seeking in sport (Bernstein, 1996; Breivik, 1996; Johnsgard & Ogilvie, 1975; Levenson, 1990; Robinson, 1985; Rossi & Cereatti, 1993; Rudestam & Slanger, 1997; Straub, 1982; Yates, 1992; Zuckerman, 1994). According to Zuckerman (1994), sensation seeking is characterized by the search for varied, novel, complex, and intense sensations and experiences, and the willingness to take physical, social, legal, and/or financial risks for the sake of such experiences. Sensation seeking behavior can be seen as the outcome of a conflict between states of anxiety that vary as a function of novelty and appraised risk (Yates, 1990). As some people become more confident through experience at a given task, they may eventually push their limits and seek novel sensations. An individual's personality, genetic predispositions, and social environment are all thought to play a role in a person becoming a sensation seeker or risk taker. (Zuckerman, 1994).

Several psychophysiological and sociological factors help determine whether one develops into a sensation-seeking adult. For example, an increase in the euphoria one experiences while seeking novel experiences is produced partly by the stimulation of dopamine (Weiss, 1987; Zuckerman, 1990). Zuckerman (1994) suggested that high sensation seekers may produce low levels of dopamine. Since dopamine helps generate a sense of satisfaction, high sensation seekers may tend to pursue activities that stimulate dopamine production (Weiss, 1987; Zuckerman, 1994). Zuckerman also stated that the nurturance or non-nurturance by the family unit and/or society for risk taking behavior could support or stifle a chemically predisposed risk taker at childhood.

Zuckerman (1994) also addressed the relationship between risk taking and sensation seeking, and noted that high sensation seekers are generally risk takers. He defined risk taking as "the appraised likelihood of a negative outcome or behavior" (p. 124). High sensation seekers find that the sensations they experience are worth any potential risks, whereas low sensation seekers do not necessarily value or tolerate the sensations achieved through risky activities. Further, low sensation seekers seldom consider high-risk activities as being worth the perceived risks. Zuckerman (1994) stated that in addition to general motivational or emotional traits, risk taking choices depend on the motivational and emotional states of the individual at the time of the decision to participate in an activity. He believed that risk is necessary for sensation seeking to occur but that risk itself is not necessarily the fully intended goal of a sensation seeker. Choosing risk for the sake of risk is not the goal. Rather, while being attracted to activities that offer novel or intense experiences, sensation seekers are willing to accept the potential risks involved.

Zuckerman (1994) also suggested that personality traits and chemical predispositions in sensation seekers allow them to take on situations and physical challenges that push their

comfort zone and elevate their experience level. The more risk experiences sensation seekers acquire, the more comfortable they feel with perceived risk. What a high sensation seeker perceives as low risk, a low sensation seeker may believe is high risk or even dangerous, and as Zuckerman notes, high sensation seekers accept higher risks to reach their goals.

In contrast to personality trait examinations, or strictly biological explanations of sensation seeking and risk, numerous studies have also addressed the psychological and sociological aspects of risk in sport and perceptions of risk in sport (Boga, 1988; Donnelly, 1994; 2004; Duanne, 2000; Frey, 1991; Priest & Baillie, 1987; Schrader & Wann, 1999; Stranger, 1999). For example, Yates (1992) looked at risk taking behavior from social, physiological and psychological perspectives. Risk, as related to sensation seeking, was defined as uncertainty. Risk was said to exist whenever the outcomes of an action are not assured.

According to Yates, there were three essential elements: 1) losses, 2) the significance of those losses, and 3) uncertainty associated with those losses. Opportunities to take or avoid risks occur for every person at every age, and how one responds depends in part on his or her cognitive, affective, and social development, as well as his or her past experiences.

Frey (1991) further defined risk as an "association with an uncertain outcome in which the possibility of significant loss or gain is present" (p. 138). Frey (1991) reflected on social risk and the meaning of sport in his essay on definitions of risk, traditional sociological risk analysis, and the application of risk to sport. Relevant to this study was Frey's assertion that risk perceptions are based on cultural and social factors, and that social perception of risk is related to public reflection of safety or danger of a situation. Frey (1991) also noted that risk is an integral part of the North American value structure, is generally valued positively, especially if success is the outcome of the risky action taken. In his study on physical risk and injury in cycling, Albert (1999) also found risk to be a constituent of the culture of sport. Cyclists were found to accept that risk was a part of their daily training and racing.

Le Breton (1990) discussed the symbolic meaning of playing with death in extreme sports. He noted the paradox that the more intense the suffering of the extreme athlete, the more the achievement has personal significance. Risk can also generate enough personal satisfaction to resist the temptation to give up. He also stated that this choice to partake in extreme sport could be a perception of the way an individual values his or her own life.

Finally, the relationship between risk and group dynamics was examined by Helms (1984). Drawing from social psychology research, Helms (1984) described what he called a "risky shift" phenomena, which involves groups of individuals, in certain contexts, that are willing to take risks as a group that they would not take as individuals. As he described it:

> When a group verbalizes its decision concerning a risky situation, the group' s decision tends to be riskier than the individuals would have recommended privately. There are several factors that affect the upward shift in risk taking capacity. When an individual realizes that he or she is not riskier than the other members of the group, he or she will adjust his or her risk-taking attitude upward. Furthermore, group discussion allows the members to rehearse their arguments regarding the decision and familiarity with a hazard promotes a higher level of acceptable risk concerning the hazard or situation. (p. 23)

Thus, the influence of the collective, whether peer pressure is involved or not, cannot be underestimated in examining risk.

Most of the previous research concerning risk taking and sensation seeking in sport settings have used quantitative methods that rely on various personality profiles, and/or with Zuckerman's (1994) Sensation Seeking Scale (Breivik, 1996; Johnsgard & Ogilvie, 1975; Levenson, 1990; Robinson, 1985; Rossi & Cereatti, 1993; Slanger & Rudestam, 1997; Zuckerman, 1990; Zuckerman, 1994). The Sensation Seeking Scale (SSS-V; Zuckerman, 1994) has been validated repeatedly by various studies in sport (Breivik, 1996; Levenson, 1990; Robinson, 1985; Rossi & Cereatti, 1993). Along with sports such as race car driving (Johnsgard & Ogilvie, 1975), numerous outdoor sports and activities have also been found to attract individuals who rate high in sensation-seeking and risk-taking. Breivik, for example, addressed personality, sensation seeking and risk taking in a 1985 Norwegian Everest expedition. Several psychological tests were administered, among them the SSS-V. Breivik's Everest climbers have proven to be some of the highest overall scorers on the SSS-V. Breivik described sensation seekers as seeing the world as non-threatening and not expecting negative outcomes resulting from interactions with the world. Rossi and Cereatti (1993) also continued work on validating the Sensation Seeking Scale by looking at mountain climbers, ski jumpers, cavers, and rock climbers as compared to physical education students and a control group.

Zuckerman (1983) also stated that for athletes, risk is not an attraction. Rather, risk is reduced as much as possible by the athlete through his or her development of skills, planning, and concentration to execute with the highest control possible. Although spectators may regard some sports as very risky, athletes tend to try and minimize risk through skill and preparation. Outside of his scale-based work, however, Zuckerman (1994) further emphasized the need for research on perceptions of risk in sport in order to better understand this phenomenon.

In an attempt to answer the question of why athletes partake in high risk sports, Boga (1988), through an interview process, profiled 10 world class athletes in sports such as hang gliding, cycling, rock climbing, and motorcycle racing. Boga found that high-risk athletes were

not fearless, but that they had learned how to handle fear. The climbers he interviewed viewed fear as an acceptable and potentially useful emotion in helping keep them safe.

One sporting event involving an extreme level of risk that has grown significantly in the past decade in the US and Canada is adventure racing. The sport of adventure racing, more specifically wilderness-oriented adventure racing, has been defined as "a non-stop, self-sufficient, multi-day multidiscipline, mixed-gender endurance competition that takes place in the wilderness over a designated but unmarked course." (Kay & Laberge, 2002, p. 25) The biggest of what are termed expedition-length events, such as the no w defunct Eco-Challenge (founded in 1995 by Mark Burnett, creator of the CBS television show Survivor) and the Raid Gauloises (first held in 1989), can take the best teams around four or five days to complete, depending on the nature of the course. The courses traverse a variety of landscapes, from to tropical rainforests to glaciers, and may include several skill sets, such as horseback riding, rappelling, white water rafting, and glaciering. Although the rules vary by event, the expedition races have no designated directions, but teams must pass through numerous checkpoints on their way to the finish line. Teams, almost all of which are corporate sponsored, generally consist of either two men and two women, or three men and one woman, although some teams have included three women and a single male team member. Although it does involve previously determined high risk sports such as mountaineering (Breivik, 1996), and canoeing (Boga, 1988) adventure racing has not been, despite its growing popularity, given significant attention by sport studies scholars (Easter, Hardin, & Stenger, 2003; Laberge & Kay, 2002)

More recently, Kay and Laberge (2002) drew from postmodern theorist Pierre Bourdieu's concept of the "field" to qualitatively investigate adventure racing. The authors, through numerous semi-structured interviews and participant-observation sessions, examined how adventure racers assign levels of authenticity to different events, as well as the levels of "spectacularization," which related to how much media coverage different events received, and more generally how corporatized they were. Among their findings was the fact that the Eco-Challenge event had a very high level of perceived authenticity, as well as high spectacularization level, while events such as the Raid Galoises was also high in terms of perceived authenticity of adventure, but less corporatized and media-driven.

As previously stated, however, most of the research on risk in sport has been quantitative. Further, although several popular press books and magazine articles used brief interviews to gain information on risk in sport (Adler, 2001; Boga, 1988; Dalloway, 1993; Duanne, 2000; Karinch, 2000; Knecht, 2001), little academic research has used in-depth qualitative interviews to better understand the phenomenon of risk in adventure-based sports (Kay & Laberge, 2002). In short, very little is known about how the athletes themselves perceive and experience risk.

A qualitative examination of the phenomenon of risk in adventure racing, may reveal concepts, belief systems, and learned behaviors that parallel the risk perspectives outlined in the research reviewed for this study (i.e., Levenson, 1990; Zuckerman, 1994). Therefore, the purpose of this study was to qualitatively examine the experiences and perceptions of risk among a specific group of elite athletes who participate in the sport of adventure racing. A secondary purpose of this study was to explore the social factors that influence how adventure racers perceive and experience risk in their sport.

Methodology

Participants in this study included ten world-class adventure racers (five males and five females) between the ages of 28 and 50 who have completed, with full teams, an expedition length adventure race (5-10 days or longer), and who have placed in the top 10 in any or all of the events they participated in. Several participants have been on repeated winning, or top three, teams in the most prestigious expedition events in the world, including Eco Challenge, Raid Gauloises, Southern Traverse, and Primal Quest. Further, several participants had been on their respective National Teams in various sports, such as kayaking and triathlon. Participants were selected using a networking process through the first author's involvement in the sport of adventure racing. The rationale for the relatively small sample size was twofold. First, saturation was seen in the data after approximately the eighth interview, though two more interviews were conducted after that point. As Seidman (1998) notes, the appropriate number of participants in qualitative, interview-based research is based on the concept of saturation, or the point when a researcher begins to hear the same information being reported. Second, the participants represented the most elite-level participants of a sport that, due to its recent emergence as a popular form of competition, has a relatively low number of world-class participants to begin with.

Prior to the first interview, the first author participated in a bracketing interview that was conducted by a colleague with an expertise in qualitative research. The purposes of the bracketing interview were to assess the effectiveness, relevance, and flow of the interview guide, allow the researcher to account for any potential biases, and finally, to develop an understanding of the experience of being interviewed (Dale, 1996, 2000; Jackson, 1996). Dale noted the importance of the bracketing interview in creating a "consciousness of presuppositions." In other words, the researcher must acknowledge that presuppositions exist, and account for them by using a bracketing interview. The accounting of one's potential biases was particularly important in this study, as the primary author was a member of the subculture under investigation. To further help the primary researcher account for potential biases,

several peer review sessions were held with the colleague who conducted the bracketing interview, and this colleague also provided feedback on the primary researcher's interviewing performance following each of the interviews. It should also be noted that the participant's status as a fellow adventure racer allowed her to gain instant access to the participants, and ask probing questions that only an "insider" would think to ask.

Semi-structured, life history interviews were conducted in settings deemed suitable to the participant (Gratton & Jones, 2004; Jackson, 1996). To obtain this data, travel was required throughout California, Colorado, and Oregon. Two interviews were also conducted onsite at a post event venue in Fiji. Semi-structured interviews allowed for flexibility in the interview process, while having the direction of the interview guide to allow data to unfold (Schensul et al., 1999). Interviews lasted between 2 and 3.5 hours, and each interview was audio-taped, transcribed verbatim, and returned to the respective interviewee (i.e., member checking) thus allowing the participants to check transcripts for accuracy (Patton, 1990; Jackson, 1996).

The interview guide was based largely on the previous theoretical and empirical research on risk taking, and was geared towards answering the central research question regarding participants' perceptions and experience of risk in adventure racing and to reflect on risk taking views, beliefs, perceptions, and experiences from childhood to present day. The first part of the interview guide focused on the participants' childhood experiences, and the majority of the rest of the guide related to defining risk, perceptions of risk, and decision-making as it relates to risk and adventure racing. The aim of the guide was to use questions that were relevant to the topic and were also open ended, allowing the participant to best describe his or her first person experiences (Dale, 1996, 2000).

Following verbatim interview transcription, transcripts were read and re-read the text for familiarity and to get a sense of each athlete's entire story. In the first level of analysis raw data themes were collected, which represented the smallest meaningful pieces of interview text (Cote, Salmela, Baria, & Russell, 1993). Following this analysis, similar meaning units were grouped into categories in order to create higher order themes (Jackson, 1996). Higher order themes were then categorized into general categories. Cote et al. (1993) emphasized the importance of the researcher not having any predetermined theme categories or patterns before data collection, allowing the important interview dimensions to emerge naturally. They further noted that "building theoretical categories and propositions" (p. 129) should be depicted only among the data collected.

Various researchers have stressed the importance of creating new criteria for establishing academic rigor in qualitative research (Sparkes, 1998). As Sparkes (1998) noted, "The qualitative research community within sport psychology must grapple with the criteria issue and learn to judge varying approaches in different but appropriate ways" (p. 382). He outlined

alternative means of judging qualitative work, and suggested that the field should move away from the term validity and seek criteria that are suitable to the particular type of qualitative work in question.

In this study, several means of helping to establish academic rigor were used. First, the author maintained a reflexive journal (Jackson, 1996) throughout the data collection and analysis process, in which she constantly reflected on the decisions that she made regarding interviewing style, data coding, thematic structure, and the write-up. Second, member checks were conducted following the transcription process, and following the construction of the thematic structure of the data. Participants provided feedback on both the accuracy of the transcripts, as well as the fit between the final themes and their own stories. Peer reviews (Jackson, 1996; Sparkes, 1998) were also conducted, in which the transcripts and reflexive journal were read by the same individual who conducted the bracketing interview. The peer review sessions continued throughout the data analysis process, and involved five 1-2 hour meetings where the researcher presented her ongoing progress on the data analysis phase of the study, and the peer reviewer posed questions regarding the researcher's choices concerning various decisions involving data coding.

Results and Discussion

This section presents the results of a thematic analysis of the athletes' interviews (C™tŽ, Salmela, Baria, & Russell, 1993). The five general categories: 1) risk socialization, 2) the space of risk, 3) mediators of risk, 4) negotiating/coping with risk, and 5) sensations (see Table 1). Each general category will be discussed through a more nuanced treatment of the higher order themes that comprise each category. In Table 1, the number in parenthesis next to each raw data theme specifies how many athletes were represented within that theme.

Risk Socialization

The general category of risk socialization refers to ways that the participants were socialized within risk from childhood to the present. The higher order theme of evolution represents the risk perceptions of the participants from youth to the present, and more particularly the ways that their notions of risk transformed throughout their lives. Nine athletes discussed this process, and felt that their current decision making process regarding risk was quite different from when they were young. As children, then as young adults, they made spontaneous choices during physical activities without thinking of the outcomes. As adults, they felt that they more carefully calculated the possible outcomes of their actions, especially within the realm of sport. For example, Adam shared the following perspective:

Table 1. *Qualitative Data Flow Chart*

Raw Data Themes	Higher Order Themes	General Categories
Socialization into risk culture (10)	Evolution	Risk Socialization
Evolution of risk perceptions (9)		
Family influences (7)	Social Influences	
Ancestry (1)		
Risk and white water (8)	Corporeal	The Space of Risk
Risk and gear (6)		
Risk and nature (5)		
Risk and animals (3)		
Risk and injury (3)		
Risk and sleep deprivation (8)	Non-Corporeal	
Risk and navigation (7)		
Risk and night (2)		
Risk in training (2)		
Supporting team through fear (9)	Team	Mediators of Risk
Team communications (6)		
Comparing gender within risk (6)		
Team dynamics (6)		
Comparing self to other teammates or teams (3)		
Trust (2)		
Reliance/pressure (2)		
Risk for individual vs team (1)		

Table 1 continued. *Qualitative Data Flow Chart*

Raw Data Themes	Higher Order Themes	General Categories
Not being in control (9)	Experience(s)	Mediators of Risk
Experience and perception of risk (8)		
Being in control (7)		
The edge/limits (6)		
Death/dying (6)		
Experience and skill perception (5)		
Experience and confidence (4)		
The unknown (3)		
Race organization mediates risk perception (7)	Race/Competition	
Riskiest part of adventure racing (7)		
Fear and racing (6)		
Risk and winning (4)		
Commercialization of risk/adventure (4)		
Spirituality (1)		
Would I do this if I weren't in a race? (1)		
Risk as the reward (7)	Attraction to Risk	
Self discovery (2)		
Feeling alive (1)		
Confidence (8)	Self Perception	
Letting your guard down (2)		
Don't see myself as a risk taker (2)		
Self punishment (1)		
I'm really a coward at heart (1)		
Comparing sport to sport within risk (6)	Social Comparison	
Comparing self to others (3)		
No ones ever done that before (2)		

Table 1 continued. *Qualitative Data Flow Chart*

Raw Data Themes	Higher Order Thems	General Categories
Assessing risk (9)	Negotiations	Negotiating/ Coping with Risk
Negotiation of fear (6)		
The odds (3)		
Deal with it (2)		
Defy body (3)	Coping	
Got lucky (2)		
Risk regression (2)		
Emotional release (2)		
Deprogramming (1)		
Went into it with an open mind (1)		
Self talk/focus (6)	Mental Focus	
Visualization (5)		
Adrenaline (6)	Risk prompts feelings, emotions, expressions	Sensations
Acceptance (4)		
Nausea/horrifying/nervous (3)		
Numbness (3)		
Boredom prompts risk (3)		
Intuition/instinct/ (2)		
Calm/relaxing (2)		
Addiction (2)		
Invincible (1)		

> I think I perceive things differently...I think we all do as we age. We now see things we didn't see when we were kids. As a kid when I was kayaking, when I was a young kayaker, I'd go down rivers I'd never seen before to see what happens. That wouldn't even cross my mind now, I mean now I think about what's around the corner, what's happening.

All of the athletes discussed how their evolution into a risk taker was tied to their socialization into risk culture. For many, taking on more risk was a gradual process of choosing progressively riskier sports. Celeste outlined the progression of her athletic life as a runner, then triathlete, then much later, an adventure racer, and noted that that process was slow and methodical. Eddie on the other hand, was exposed to high-risk sports from a very young age. He shared his perspective on how exposure to risk can be directed in one's childhood environment:

> I look at a lot of people that grew up in the city and the suburbs and never had the opportunities to do the things I did. I mean they did high school sports but I don't think the avenue to really push themselves [in terms of risk] was there. Where you grow up in a ski resort town or something, we're building kayaks, paragliding, jumping, doing everything...

Thus, in addition to Zuckerman's (1994) work suggesting that there is a sensation-seeking personality type, it is clear that socialization, and the progression of one's life experiences, are also an important component in how world-class adventure racers view and experience risk.

As Coakley (2004) noted, perhaps the most potent sport socializing force involves the influence of significant others, including close friends and family. Participants in this study had dramatically different feedback regarding their early life experiences in risk culture, and their eventual entrance into the subculture of adventure racing. Nick, for instance, discussed the weight his ancestry has had on his life as an adventure racer, and discussed how he carries his culture into his events and training:

> If you look at my ancestry, the Polynesians, it wasn't that long ago when they were out here in canoes fighting for their lives and taking voyages of survival. And the Scottish, they have been fighting in the highlands forever.

Zuckerman (1994) stated that although familial influences and early exposure to risk can be factors in perpetuating risk taking behavior in children, environmental influences, peer influences, as well as physiological predispositions, all add to the equation of whether one becomes a risk taker or sensation seeker as an adult.

The Space of Risk

The second general category that emerged from the data, the space of risk, comprised aspects of the competitive environment that involved both corporeal and non-corporeal threats to the participants. The presence of these threats was found to contribute to perceptions of risk within the sport.

Because expedition adventure racing most often takes place in tropical or alpine wilderness conditions, participants frequently discussed their perceptions and experiences of risk in natural settings. White water was among the most prevalent aspects of the natural world mentioned. Virtually all expedition events contain some sort of white water, and athletes are required to navigate rivers either in floating apparatuses of some sort (i.e., kayaks, canoes, inflatable boats), or with their bodies while swimming. As Eddie noted regarding one river swim in an Eco Challenge event, the potential dangers were obvious:

> It's like the swim in Borneo. I've swam a lot of rivers and I'm like, 'this is [expletive] stupid'. There are trees [in the river] and it's just not smart...and whoever thought of that river swim wasn't thinking very good, especially at night! There's no way people should have been in there at night. I was like 'you want me to swim through that log infested thing, I'm like no way'. And I was getting caught up, I'm like, this is really dumb.

Notably, none of the participants had ever refused to enter into similar perceived high-risk situations while racing. However, as we discuss later, the perception of something as high-risk necessitated the implementation of some form of coping response.

Several athletes also discussed the risks involved in encounters with animals. The animals were those they were either required to ride or interact with (horses and camels) or, animals they might encounter while racing (snakes, sharks, bears and other wildlife). Bob, for example, commented that he had competed in several events where there were large snakes in the water they were traveling through. He added that, "you don't have to be the fastest, just don't be the last!" .

Six athletes talked about risk and gear. They referred to either gear they chose incorrectly for an event, or, gear that was placed on the course or given to them to use by a race

organizer. Many of these athletes expressed a concern with placement of gear (such as fixed ropes that are placed by the race organization) over which they did not have control, as Nick stated:

> I've been nervous sometimes on the ropes. Mainly because of the rigging [setting of the ropes and other protection on cliffs and mountains]. Because I'm a rigger, and I often will talk to the rigger [race staff] and say, 'hey I've just hit some dodgy ropes'.

Again, although the participants had doubts over the gear they were using, they ultimately chose to continue the competition, whether or not they fully trusted the competence of the race organizers. As Easter, Hardin, & Stenger (2003) noted, liability is one of the most important concerns in the sport as it continues to grow.

Non-corporeal aspects of perceived risk involved things that were indirect threats to safety or well-being, such as racing at night, navigation, and sleep deprivation, that contributed to perceptions of risk within adventure racing. Most of the participants discussed sleep deprivation as an added risk to adventure racing. It is important to note that the combination of navigation and sleep deprivation is unique to the competitive sport of adventure racing, and in order to win an event, athletes must engage in both (Marais & de Speville, 2004). The collective perception was that adding sleep deprivation to the existing corporeal risks was exceedingly more risky than engaging in these activities while rested. Eddie elaborated this idea:

> It makes the risk a lot more real, a lot more dangerous. You know there's a huge risk there when you're sleep deprived and stumbling around and it's dark and it's a lake and you're trying to get out of there fast. You're not thinking very well and so the risk goes up. I'm amazed there aren't more injuries.

Seven of the athletes shared their thoughts on risk within the activity of navigation in adventure racing. In expedition competitions, athletes are required to navigate with a topographical map and compass through wilderness terrain via checkpoints to the finish line. Unless specified by the race staff, participants are allowed to take any route they choose to reach their goal. Bob discussed the inherent dangers in the combination of tricky navigation and sleep deprivation:

> When you get off course, you make a mistake and you get off their [the race organizations] prescribed route. We found ourselves at night in some fairly volatile weather with a storm moving in, and the fog, where we could have literally walked off a cornice [a precarious overhanging mass of snow, ice, or rock usually on a ridge] or a rock precipice and you know, that would basically be it. And then I found myself sleepwalking on a cornice, you know, like you're driving a car and you wake up, and you realize oh my gosh, if I screwed up I could have been over there [points down].

Within all discussion of risk whether athletes referred to navigation, sleep deprivation, or nature, the placing of the activity or situation at night always enhanced the perceived fear and risk.

Mediators of Risk

The general category of mediators of risk highlights all potential interventions promoting reconciliation, settlement, or compromise surrounding risk experiences or perceptions. The higher order themes for this category included team factors, experience(s), attraction/aversion to risk, race/competition, and self-perception.

The majority of the references to "team" in this study were within the sport of adventure racing. In his research on evaluations of risk, Helms (1984) discussed his "risky shift" phenomena as being a valued form of behavior among risk taking individuals in a group setting. Several of the athletes who discussed team dynamics within risky situations in events referenced their ability to take a risk when another teammate would lead. More specifically, if the risk allowed them to gain time or take a short cut, they would choose it by following another teammate's lead. Betty stated the following about situations within white water:

> Terri: What helps you get through that [fear of white water] in a race?
> Betty: I rely a lot on what someone else is doing. Like if you are there [her teammates] I rely that they are in control and I try and feed into that.

Indeed, as Donnelly (2004) stated, there is an intimate relationship between risk and trust, because many sports, including adventure racing, necessarily prompts participants to trust that others (e.g., teammates) will "play their part appropriately." (p. 48)

In this study, nine athletes discussed their experiences with supporting each other through fear and trust. They all agreed that support and trust from others has allowed them to either help other teammates through difficult situations or allow themselves to get through

them. Julie expressed feeling supported by her teammates by following their lead through a very cold river swimming section:

> I hated it. And I was really just trying to go as fast as I can to get to the end. And there were a couple times I was screaming for Eddie [one of her teammates] cause he's like the white water guy. I mean I just sort of follow his lines and I really sort of, it's almost like I referred to him and Jack. Jack 's like 'keep your arms moving'. I was still doing it but I was really looking for them, and trying to keep up with them because I didn't want any distance between us.

Athletes also noted their decisions to take risks based on the pressure they felt from teammates. They discussed feeling relied upon to complete the task or event. Based on pressure or reliance, athletes chose risk while placing consequences in the back of their minds. This need to divert attention from the possibility of injury or death relates to Donnelly's (2004) contention that it is difficult to reconcile risk with responsibility, particularly with respect to family members and other significant others.

Within expedition adventure racing, teams are predominantly co-ed. Of the six athletes (five women and one man) in this study who discussed gendered aspects of risk, all of them defined and valued the traits of nurturance, acknowledging limits, admitting fears, and asking for help. Several of them also felt that within the ranks of the elite in this sport, there were a lot of similarities between men and women in their abilities to execute efficiently. Betty shared this thought:

> You can say the kinds of macho things that guys decide would be perceived to be more risky but I don't [think] that is necessarily true. I think the elite people who are in adventure racing the males and females are more closely aligned. I think in life you have the extremes of the macho kinda guy and the girly girly. But I think the people who choose and who are successful in adventure racing are more towards the center of that line. So I think decisions and things are made more based on personality and things. I don't think it's a gender thing.

All the athletes in this study supported having teammates, regardless of gender, who showed the ability to take risks and practice supportive, nurturing behaviors during competitions. These results lend support to Schrader and Wann (1999), who examined gender as a potential predictor of involvement in risk-taking activities, and found that gender alone may not be the best approach in defining high or low risk individuals. Further, Donnelly (2004)

argued that, as opposed to biological or strictly psychological differences, any gender differences in risk-taking may also be a result of social context, and the availability of risk activities such as adventure racing.

The higher order theme of experience(s) refers to either an athlete 's experience base that provided him or her a sense of familiarity with a given scenario during adventure racing. Though the predominant perspective in this study was that greater experience provided a platform from which to engage in greater risk, two athletes noted that inexperience in a particular activity allowed them to feel more comfortable executing a task. These individuals felt that their ignorance allowed them to deny potentially negative outcomes and execute the task without considering the consequences. Julie though, agreed with the majority of the participants:

> I think the perceived risk, like for the beginner and middle of the pack teams [in adventure racing] is huge. Cause they are really out there, they're just like 'oh my god we are just so out here', and that's how I thought when I first started. And now, the perceived risk among the elite teams, they don't perceive the risk at all, I don't think. I mean I'm out in a race, and you have a hill you have to go down...you just go!

As Priest and Baille (1987) noted, the adventure experience is a function of an individual's competence within a particular risky situation. Five athletes discussed skill perception, as it related to experience, as an important aspect of risk behavior. Julie, for example, started rock climbing when she was in college, and she felt tha t her current advanced skill level in climbing allowed her to feel comfortable challenging herself. Within the sport of white water kayaking, a new sport to Julie, she felt differently:

> I'm technically not very good [at kayaking]. I don't understand the equipment all that much and that feels risky to me. Where as climbing I just know it a lot better and I can make better decisions and I know how hard I can climb and I know what I can do or can't do...so it feels like there is more risk in my life with new sports.

Delle Fave et al. (2003) also noted that an athlete's perceived level of challenge is related to perceived personal capabilities. In their study on climbers, they found that optimal experiences were characterized by a balance between high challenges and high skills. Julie expressed her discomfort with kayaking due to her lower skill level, while she repeatedly expressed her love of climbing and her advanced climbing skills.

Though related to experience, the notion of control also emerged from several participants as a separate theme. Lyng (1990) established that voluntary risk takers have an aversion to circumstances that they cannot control. Lyng felt that successful risk takers have a unique ability to maintain control over situation that verge on complete chaos, and that most people would regard such situations as uncontrollable. This idea is supported by Adam, who definitively stated, "I don't think I'd do something if I didn't feel in control. And I've never felt out of control in a race. I like to think about that because I can't remember feeling out of control in a race."

Six athletes also described, somewhat ironically, their aversion to risk during times when they legitimately felt that death was a possible outcome. The possibility of death in adventure racing was also a common deterrent to choosing certain risk behaviors, and it was often juxtaposed to the competitive aspect of the sport, specifically winning. Stephanie summarized in this statement about winning races:

> Terri (Interviewer): The concept of winning comes into play in reference to the decisions you make?
> Stephanie: Yeah, that's clearly important, but not dying is more important than winning.
> Terri (Interviewer): So dying is sort of like the line you draw. But winning is...
> Stephanie: Second place is a distant second place, first is not dying.

While researchers have often tried to explain participation in sports where death could occur (Donnelly, 2004; Groves, 1987; Schrader & Wann, 1999), the athletes in this study, like Stephanie, discussed death with either an aversion or indifference. In reflecting on the feeling of control and death, Schrader and Wann (1999) argued that one method of achieving the illusion of control over one's mortality is cheating death, and that participation in high-risk recreation may provide one method of cheating death, thereby gaining a feeling of control. The tension between risk-taking and risk-aversion relates to Donnelly's (2004) idea that there is a larger societal tension between what he calls a "culture of risk" and a "culture of caution." (p. 50) From Donnelley' s perspective, a number of factors (e.g., fears over becoming ill, of surveillance, etc.) conspire together to suggest that adventure racers exist in a tenuous space between the fears of risk in the "real world" and the realities of risk in adventure racing competitions.

Despite the potential for grave injuries and death within adventure racing, then, the athletes in this study tended to believe that their experience, teammate support, or drive to win will keep them from harm's way. Donnelly (2003) noted that there is an essence of denial by athletes, in order to allow them to feel comfortable participating, and that the same sort of

denial exists within the media in order to support pro-commercialization of risk-related sport and recreation.

Another major sub-theme related to mediators of risk was self-perception. Confidence emerged as a dominant theme in Slanger and Rudestam's (1997) study on elite rock climbers, skiers, kayakers and pilots, and seven athletes in this study exposed their levels of confidence within sport. Some talked of the confidence they embodied while taking their current abilities into the sport of adventure racing. These athletes stated that this confidence might drive their decisions to take risks in adventure racing. All agreed that feeling confidence from past successes has fed their ability to feel relatively comfortable with risk in races, as Celeste stated in the following:

> My experiences have given me the confidence. As you gain more confidence you're more willing to put yourself out. And you don't consider the things that prior might have been a risk to you. It becomes more of the norm. It's just confidence. It's maturity.

Social comparison was also an important mediator of risk, as athletes compared themselves to other athletes and compared different sports through their perceptions of risk. These comparisons became the intervention to the risk perspective, and allowed the participants to reconcile their risk taking choices. Three athletes compared themselves to others, by placing themselves at a point on a continuum of risk takers within a given sport. Some examples included, "I am more conservative than most climbers", or, "If he can't paddle that rapid, then I can't as well".

Reflecting on social comparison, Donnelly (2004) discussed the relationship between social views of risk and the internal negotiation that athletes must engage when making choices to choose risky activities. He stated that an athlete may choose to suppress any sense of vulnerability in order to participate in an activity that no one has done. The reward, therefore, is the favorable social comparison to other athletes. The same athlete may need to decide how he will react to seeing others get injured or dying as a result of similar risky activities. Donnelly felt that athletes might be denying the dangers in order to choose risk to gain a favorable social view. The athletes in this study used social comparison to not only believe that they were physically safe within their own perception of risk but to intensify their feeling of success within risk.

Several athletes also discussed risk and adventure racing from a perspective of self discovery, personal rewards and accomplishments. Eddie reiterated his perspective on risk and rewards, one that is shared by several other participants:

> Define that risk, accomplishing that task. And avoiding the risk. Cause it 's huge. That's the reward for me. And I have taken a lot of risk where I didn't avoid the risk. I've spent a lot of time in the hospital. I've definitely paid my dues on the risk taking. Yet I still do it. And there's something there that, something in me there that, I think that's why I really like adrenaline type sports and all that cause I can push myself. The more learning involved the more work that goes into accomplishing the risk, the more rewarding it is for me.

One potential explanation for Eddie's comments lies in Priest and Baille' s (1987) belief that people are motivated to undertake adventures because their lives are rationalized, controlled, packaged and extrinsically rewarding.

Negotiating/Coping with Risk:

There are three higher order themes within the general category of negotiating/coping with risk; 1) negotiations, 2) coping, and 3) mental focus. The first higher order theme, negotiations, refers to internal or external discussion, consultation, talk, or parley, within the athlete's relationships with risk. Adam, for instance, measured risk to assess the odds of risk in adventure racing:

> The way I see an adventure race in terms of potential outcomes is that say you're doing a 7 day race with 4 people, that's 28 days of people racing at say 20 hours a day. That's 156 hours of, whatever it turns out to be. That's a large number of hours of doing some fairly fast things, with moving objects and solid objects around and there's gravity involved, at large heights. And then all those hours of doing things in really uncontrolled environments, lots of possibility that something's gonna happen

The second higher order theme is coping. Coping in this context refers to perceptions that allow the athlete to manage their risk choices. One athlete emphasized the need to deprogram herself from past fears, in order to cope with current risky situations and execute, while another felt that going into an event with an open mind helped her cope with difficult situations. Two female athletes stated that their release of emotion in the form of crying, allowed them to cope with the pressure surrounding risk in adventure racing. Stephanie stated the following:

> When I make it through big [expletive] or something really hairy or just so intense, I always cry. It's not that I'm sad or that I'm happy, it's just that it's over and it's such a build up of tenseness and emotion and that's the only way I've found, it's like a quick dump of all that extra energy and fear.

Two athletes disclosed that luck allowed them to cope with the danger of a situation, as stated here by Carrie:

> I've definitely stopped doing ice climbing in mountaineering. Because of that big climb that I told you about, because of my falls, because I just don't want to die. I've perceived in a lot of situations that I was in we had it pretty lucky, we got away pretty lucky. Some other climbs I can think of as well we got away pretty lucky.

Three athletes discussed the ability to defy their body in order to pursue physical tasks, like training and racing. There seemed to be a blurred line drawn between accepting the knowledge that injury was possible and ignoring injury potential in order to execute. Albert (1999) supported this finding in his research on cyclists. He noted that although cyclists know that the sport is objectively dangerous, they construe injury risk as a salient feature of participation. In that, they commonly engage in conversation to normalize injury occurrences to potentially diffuse it as a deterrent to continued participation. The athletes in this study used this type of rationalization process to justify their risk choices, and they often discussed injury as if it were a standard part of sport.

Finally, two athletes coped with fear and risk through an act of risk regression. They both discussed their cessation of participation in an activity in which they knew someone who had died or almost died. Carrie talked about her decision to stop mountaineering due to a couple "close calls" in the mountains. Eddie talked about seeing friends die while kayaking, and his decision to stop participating for a short time. In the month subsequent to the interviews, however, both athletes again began participating in these sports that they previously mentioned they had "given up."

The last of the higher order themes that emerged in the general category of negotiating/coping involved the implementation of mental strategies such as visualization and self talk. In using visualization to execute a risky situation, two athletes discussed their view of 'the end', visualizing themselves getting to the end of a section, or the race. Stephanie stressed that the end would not come to her, that she must therefore visualize the end to get to the end. Several other athletes discussed their use of visualization in specific sport situations. Eddie saw his brain as a camera and used this skill as a form of visualization:

> I mean I can tell you, I could pretty much draw you rock for rock every rapid that I've been through. It's in there. It's stored in there and if somebody asks me about it I can tell them exactly where the line is. I don't know why that is. Like directions, like with navigating and stuff, I remember every course I've done adventure racing. Everything.

Finally, six athletes used self talk as a means to execute risk in statements, including phrases like, 'just relax', 'you can do this, keep your head together', 'I'm a better climber than this', 'you've run harder, this one's not bad you can do it', and 'god damn, pay attention'. Interestingly, although research by Theodorakis, Weinberg, Natsis, Douma, and Kazakas (2000) suggested that instructional, rather than motivational, self-talk was most effective when a given task required fine motor control, the participants in this study seemed to rely predominately on motivational forms of self-talk. It is possible that, due to the fact that the participants' level of expertise in most of the adventure racing tasks was very high (i.e. autonomous phase of motor learning), motivational self-talk was more effective.

Sensations:

The final major thematic category is termed sensations, and it represents the athlete's feelings, emotions or expressions prompted by risk or thoughts of risky activities. These sensations were instrumental in guiding perceptions of risk within an activity.

Stranger (1999) remarked that accounts of nature and the thrill in risk taking activities often evoke ecstatic feelings, oneness with the environment, loss of self and intense awareness. Several participants noted a sense of calm or relaxation just prior to going into a risky situation or as a result of high risk, as Eddie stated here:

> I think I use a lot of things I do really obsessively, meaning kayaking, whatever. I use kind of a mind relaxation. Like I'll go up and ski really hard today probably this afternoon and fill myself up with big jumps and come home totally relaxed. It's the biggest way to relax.

In contrast to the more positive, affirmative feelings expressed above, several athletes shared their feelings of nausea, nervousness, or horror as they were about to engage in a high-risk task. Nick, for instance, compared his feelings to those who experienced danger in war situations:

> The first thing I feel [going into big white water in his kayak] is quite nauseated and quite sick And when I'm putting my spray skirt on and I look around at my mates, and it's kinda like, I'm not sure, but it must be the same feeling people feel when they are just about to abseil from a helicopter into a war zone.

While perhaps an overstatement, Nick's quote illustrates the visceral nature of risk-taking, even among the most highly skilled competitors.

Conclusions

From the interviews with the elite adventure racers in this study, five general categories emerged. These included risk socialization, the space of risk, mediators of risk, negotiating/ coping with risk, and sensations. Many of the athletes discussed perceptions of risk and risk taking behavior that coincided with previous research. Some of these included: self perception of confidence used as a mediator to executing risk, the need for perceived control, embracing the unknown, death as a mediator to risk, the view of risk as the reward, and the common use of visualization and self talk in risk taking activities.

It is important to highlight the development of each participant's risk perceptions from youth, his or her current risk perceptions, and how these current risk perceptions related to their adventure racing experiences. While some of the athletes were socialized into risk at childhood, others were raised engaging in lower risk sports. The athletes with the youth risk taking exposure were the individuals who currently engage in the highest risk sports (i.e., white water kayaking, paragliding, extreme skiing, mountaineering, rock climbing), outside the sport of adventure racing. Though all athletes interviewed for this study successfully engage in the most risky aspects of adventure racing, such as white water and mountaineering, those who were socialized into risk at a young age tended to express more comfort with the risk in adventure races. Of course, this did not hold true for all participants, and as Donnelley (2004) points out, the relationship between risk-taking, culture, and socialization is complex, and worth of continued research.

Unique to this study were the athletes' perceptions of risk while competing in the sport of adventure racing. Most of the athletes discussed sleep deprivation as a prominent high-risk aspect of adventure racing. Specifically, they talked at length about the how the inability to execute tasks safely and make efficient decisions due to lack of sleep increased the danger within a race. However, all of the athletes were willing to take such risks within adventure racing competitions in order to win an event, except when a perceived risky action could be construed as life threatening. That said, most participants also mentioned that they had followed other teammates or teams into potentially unsafe situations in order to gain an advan-

tage, and none of the athletes mentioned backing down from a risky situation in a race. They were either supported by teammates through their fears, or pressured into executing. Significantly, the study demonstrated that the desire to take risks within a race was viewed as necessary to the success of the team. From these findings, future research on the nuances of team dynamics within both elite and non-elite adventure racers is certainly warranted.

Two other risk perceptions unique to this study were navigation, and the ways that the race organization mediated risk for the athletes in an adventure race. Within an expedition race, athletes often have many route options. There is generally a desired course laid out by the race organization, but errors in navigation, or route choices that are considered "short cuts," will often lead teams into dangerous terrain. Because of this, and the compounding of navigational challenges due to sleep deprivation, most of the athletes perceived navigation to be a potentially risky aspect of the sport.

Given the risk perspectives unique to the sport of adventure racing, it is accurate to say that the structure of the events, including navigation and sleep deprivation, the race production's mediation of risk, and the insertion of strategy and speed in order to be successful, all work to form a particular construction of the concept and experience of risk within the sport. To win or complete an event, the athletes must overcome fears, deal with team dynamics, adapt to changing environments, and endure physical stress, all while moving quickly and sleeping little. The athletes either accept this construct of risk within the subculture of adventure racing, or they choose to not participate. Given that not all adventure races are expedition length, however, future research should also address risk in adventure racing with athletes who compete in events shorter than several days in duration, and events that do not include sleep deprivation. Further, the more recent increase in "urban adventure racing" events, in which competitors traverse urban landscapes, may also be interesting to investigate.

The participants shared that the risk for slower teams is much less than that of winning teams. The slower teams may choose to sleep more and thus reduce the risks inherent in sleep deprivation. Elite teams must choose sleep deprivation, high speeds for longer periods of time, and potentially risky navigation choices in order to gain time advantages. With gained experience, elite athletes may feel comfortable with those choices. Future research, however, is needed to examine the experiences of less seasoned adventure racers who have not been socialized into a culture of risk since they were young, and are not experts in any of the skills required to complete a race. One of the limitations of this study, in one sense, was that all of the participants were elite. And thus the results may not generalize to non-elite racers, who make up the majority of adventure racers when one considers the entire breadth of events.

Despite all of the above stated perceived risks within adventure races, the majority of the athletes felt that the race organization, armed with staff, radios, GPS (global positioning systems) and wilderness medical teams, diminished the risk within racing. Because the athletes have the option of communicating with the race organization at any time (despite the fact that they will be disqualified if they open and use their radio), there was a strong feeling of safety within events, much stronger than what they felt when they were training. One further area of interest for researchers is what Donnelly (2004) calls the "interesting cultural moment" that currently brings together risk assessment, the culture of caution, and the commodification of the culture of risk. Despite a seemingly growing number of public fears, from terrorism to identity theft to natural disasters, sporting and entertainment-driven entrepreneurs, along with technological adventure gear developers, have found in adventure racing a profitable endeavor. What, for instance, are the motivations of people in the business sector catering to individuals with a desire to participate in adventure racing? How does risk culture, including adventure racing, relate to socioeconomic status? (Donnelly, 2004)

Finally, additional research should be done on gender and risk in adventure racing. Although athletes in this study generally deemed gender roles to be less relevant over the course of a multi-day adventure race, it is certainly possible that the elite level athletes may experience gender dynamics differently than novice competitors.

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