CONCEPT ARTICLE

The Perception of Risk and Risk Taking Behavior: Implications for Incident Prevention Strategies

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Core to incident prevention strategies is the need to identify factors that influence the decision-making process linked to risk-taking behavior. Participants' perception of risk and associated norms and practices may play a key role in relation to decisions to engage with a risk and subsequent risk-management strategies. A range of factors that influence the perception of risk and risk-taking behavior are discussed. It is proposed that prevention strategies need to be sensitive to the context of participation, the attitudes and beliefs of participants, and the motives for participation. To ignore such issues may result in the development of inappropriate approaches to the management of risk that may be discredited, resisted, or negate reasons for participation.

Key words: perception of risk, risk taking, outdoor adventure, accident prevention

Introduction

Outdoor adventure activities can provide participants with a wide range of physical, social, psychological, and, some would argue, spiritual benefits. However, there is a balance to be achieved between the benefits associated with risk and the need to control risk to avoid or minimize losses. The perception of risk, and an individual's motives to encounter risk, may determine subsequent responses to risk. This response may include the motivation to develop skills and knowledge, the safety equipment and practices adopted, and the environments entered. This paper aims to consider a range of factors influencing the perception of risk and risk-taking behavior. The significance of these factors to the development of prevention strategies is discussed.

The positive nature of risk

Lupton and Tulloch¹ state that while there is a tendency to categorize risk as negative, there are also positive meanings associated with risk. A number of participants

in their study expressed the view that “. . . risk, in posing challenges is what living as a human being is all about.” Coffey,² in her evaluation of the personal costs of climbing, states “The world needs risk takers. They inspire, challenge and encourage. They set off sparks, igniting fires that burn long after their passing.”

The positive elements associated with encounters with risk have been identified in a wide range of activities including mountaineering, mountain biking, surfing, skydiving, and motorcycling.^{3–12} Themes in the literature relating to the motives for voluntary risk taking include self-development, freedom, a sense of power, control, thrill, affirmation of the self, challenge, escape, the fulfillment of social needs, self-empowerment, improved status, and contact with a “higher power.”

A range of psychobiological differences have been identified that are seen to be linked to personality characteristics that impact upon risk-taking behavior.^{13–15} Zuckerman^{16,17} describes the existence of a general personality trait of sensation seeking and suggests that a subcategory of this is thrill and adventure seeking. He argues that risk taking is not the main reason for sensation-seeking behavior, it is a price that some will pay to satisfy a need. This personality trait may influence participation in leisure and sporting activities.^{18,19} Stelmack¹³ points to two interpretations of the behavior of high sensation seekers, one is that there is a drive for optimal levels of arousal; the other is that they are able

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to tolerate high levels of stimulation and, therefore, do so. Lyng²⁰ suggests that risk taking may be necessary for the well-being of some people.

The motivation to encounter risk may be linked to factors intrinsic and extrinsic to the individual. Ewart⁵ notes that if factors such as excitement and challenge are motivational, steps to safeguard the participant may inhibit the very reason for participation. For example, in relation to high altitude climbing, Athans (cited by Both⁶) states, "The adventure is controlling your own fear and ignorance." Delle Fave et al⁷ argue that accident prevention strategies should focus upon the matching of skills with challenge and not just the elimination of risk, which would remove reasons for participation. Such an approach is seen to preserve the essence of the experience and provide opportunities for optimal experience.

The perception of risk

To an individual undertaking an activity, the intent and behavior may be rational. To the observer, unaware of the cognitive processes and the context of the behavior, the behavior may appear stupid, ignorant, irresponsible, or irrational. Aronson²¹ has put forward the view that "people who do crazy things are not necessarily crazy." Understanding the participant's perspective is a key component to prevention strategies. For example, not using protective equipment may be a rational response based upon direct experience of the impact upon performance with the benefits being seen as being outweighed by the disadvantages.²²

Individuals' views of risk may be influenced by a number of psychological, social, institutional, and cultural factors.²³ A range of qualitative factors influencing the perception of risk has been identified. These factors include controllability, perception of costs and benefits, voluntariness, familiarity, and dread.²⁴ Renn²⁵ has identified factors that he describes as acting as intuitive biases in the perception of risk. These include the mental availability of events, the significance of the information to the individual, events experienced in person and whether or not information supports or goes against belief systems and the subsequent avoidance of cognitive dissonance. The perception of risk may lead to undue confidence or risks being misjudged.²⁶

PLURAL RATIONALITIES

Lay and expert assessment of risk may be at variance; this variance may represent biases in the perception of risk.²³ Joffe²⁷ is critical of models of risk that present perception of risk as often erroneous and deficient in-

formation processing at the individual level. Differing views of risk may be based upon rational but alternative assessments. The view of risk developed becomes reality to the individual. Natalier²⁸ highlights how the culture associated with an activity can provide a framework through which risk is viewed. She argues that lived experience and acquired knowledge and associated culturally based assumptions can result in responses to risk that differ from those determined by socially defined expert systems. Views of risk produced by expert systems may be marginalized or not seen to be applicable or being blanket responses that do not account for specific circumstances.

THE REPORTING OF RISK

Events that jump to mind are rated as more likely than events less mentally available.²⁵ The reporting of risk by institutions such as the mass media and social groups can result in the social amplification of risk. Not reporting on risk can lead to risk attenuation.²⁹ Hence, the reporting or nonreporting of risk may influence the perception of risk. For example, media coverage of dramatic incidents may give the impression of high levels of occurrence that are not born out by statistical evidence. Less dramatic yet high frequency occurrences may not stimulate media interest, and this in turn may lead to an underestimation of risk by participants. International media will report upon a surfer killed or seriously injured by a shark; however, the incidence of "surfer's ear" or cuts and bruises does not command the same level of interest.

ATTITUDES, VALUES, AND BELIEFS

The influence of one's belief systems and the avoidance of cognitive dissonance is illustrated by Alhakami and Slovic.³⁰ They suggest that there may be an inverse relationship between perceived benefit and risk and general affective evaluation of a hazard. This suggests that if an activity is liked, the benefits are judged to be high and the risks low. If an activity is disliked, the benefits would be perceived as low and the risks high. In such a way, our view of risk may be biased to reflect our preferences and beliefs. The avoidance of cognitive dissonance may result in probabilities being downplayed or ignored.²⁵ As an illustration, an activity that may result in damage to joints, may be justified in terms of cardiovascular and mental health benefits. A key issue emerging is that our interpretation of information both supports and influences our perception of risk.

THE REWARDING OF RISK

Slovic et al³¹ have drawn upon concepts of behavioral theory to explain reasons for not utilizing equipment designed to reduce injuries. Each time an incident does not occur, the avoidance of the inconvenience and discomfort of preventative and precautionary action may reinforce behavior. Thus incident-free activities may result in a failure to take preventative action. Not wearing personal flotation devices in aquatic environments may be an example of this effect. The effect of reinforcement does not necessarily have to be negative. It may be the case that safety equipment adds to the experience and allows for the participant to encounter more challenging and desired experiences, thus its adoption is reinforced. Additionally, the wearing of such equipment may define the individual as a committed member of the subgroup or someone likely to embark on high-risk activities and, therefore, requiring additional safety measures. As a consequence, safety behavior may be reinforced as it is subject to social approval and meets esteem needs.

THE ROLE OF THE GROUP

Membership of cultural and social networks and groups are important in the construction and meaning of risk.¹ Scherer and Cho³² argue that the relational links between individuals, and the associated social networks and systems, influence individual perceptions and result in groups of like-minded individuals. These social units are seen to structure knowledge attitudes and behavior.

Normative factors such as a desire to comply with encouragement or norm imposition may influence risk-consumption behaviors. Celsi et al¹⁰ suggest that "group polarization may occur whereby a moderate attitude shifts to a more polarized attitude in the presence of others." Through the use of specific language, acceptance of norms and attitudes and cultural beliefs, initiates become socialized to a particular view of risk associated with the activity. Thus, high-risk activities that may initially be regarded as extreme come to be viewed as the norm. Risk comes to be seen as a salient aspect of the activity and its deterrence to continued participation is diffused.^{10,33}

Injury and losses can be a way of demonstrating commitment and act as a right of passage and affirm membership.³³ Webster (quoted by Coffe²) states, "No one wants to get badly frost bitten, but to mountaineers it's a badge of honour." Rutter et al¹¹ suggest that as time passes, there is conformity to the norm of risk and the increase in risky behavior is a way of expressing that norm. Participation in high-risk activities can fulfill so-

cial needs and supports a bond between the participant and the culture of the activity.

In relation to those operating at the extreme level of performance, Lyng²⁰ states that injury and death due to poor planning and lack of standard safety precautions is not viewed well. This may result in social pressure to adhere to what may be collectively regarded as good practice. This is an example of the positive impact of social pressure on safety behavior. Conversely, Taylor et al²² indicate that social pressure and issues of image can act as barriers to the use of protective equipment.

Group norms and the social acceptability of behavior may act as powerful determinants of risk-taking behavior. The utilization of such factors may prove to be an effective means of ensuring compliance with "good practice."

RISK COMPENSATION/RISK HOMEOSTASIS

The Risk Compensation Model/Risk Homeostasis Theory described by Wilde and modified by Adams (cited in Adams³⁴), proposes that everyone has a propensity to take risk and this varies between people. The way in which we learn to assess risk is based upon our evaluation of outcomes and our own experience or our knowledge of the experiences of others.³⁵

Wilde holds that the following 4 factors determine the target level of risk:

- The expected benefits of risky behavior
- The expected costs of risky behavior
- The expected benefits of comparatively cautious behavior
- The expected costs of comparatively cautious behavior

It is proposed that adjustments occur in risk-taking behavior if it is perceived that there is movement away from the target level of risk. If it is perceived that an element of risk is reduced, other aspects of risk may be introduced to return to the target level. So, for example, the adoption of a global positioning system to aid navigation may not necessarily reduce the numbers of people getting lost as people may be more willing to go to remote environments or venture out in poor visibility.

Adams argues that people have a need for excitement or arousal. As a result of this, he is of the view that initiatives designed to reduce risk may not result in an overall reduction in losses as risk is displaced to another arena.

Hedlund,³⁶ in a review of risk compensation, draws attention to 3 injury prevention strategies:

- Persuade persons at risk to change their behavior
- Require behavior change by law or administrative rule

- Provide automatic protection through product and environmental design.

He points out that the Risk Compensation Model/Risk Homeostasis Theory, challenges the foundations of injury prevention strategies as it takes the stance that the only effective safety measures are those that alter desired risk level. Consequently, to modify the environment or regulate behavior without altering target risk is seen to be of limited value.

In his appraisal of the Risk Compensation Model/Risk Homeostasis Theory, Hedlund points out that risk compensation occurs in some situations; however, evidence shows that safety law and regulation is not necessarily counterbalanced by compensating behavior. The issue is not whether compensation occurs, but predicting when and by how much is it likely to occur.

OPTIMISM BIAS

An “optimism bias” may exist in relation to the perception of risk. Individuals may perceive that the level of risk is lower for them than it is for others in the same situation.^{11,37} Weinstein³⁸ points out that “optimistic biases” exist for a wide range of health and safety risks and that these biases are strong for hazards that are regarded as personally controllable, rated as low probability, and with which people have little personal experience. Additionally, Weinstein suggests that biases are likely to be large when people believe that signs of vulnerability will appear early and, therefore, the absence of signs of vulnerability is interpreted as them being exempt from future risk. Weinstein regards the existence of optimism bias as being a block to attempts to reduce risk-taking behavior. Seifert (quoted by Coffe²) is of the view that in relation to mountaineering and expeditions, participants recognize that terrible things can happen to people. These events are seen to be due to bad luck or mistakes and will not happen to them.

Optimism about successful behavior may encourage action, which in turn leads to success. Participants with less experience, who have not encountered the full array of possibilities, may have the illusion that they are in control and, therefore, can be caught out by the severity of conditions. Belief in one's ability may enable the individual to maintain control of themselves in the face of chaos; this may result in success and so perpetuates the illusion.²⁰

NORMALIZATION OF RISK

Over time, risk may become normalized and participants learn to accept risk.¹⁰ Anxiety associated with the stages of the activity is seen to vary with experience. Celsi et

al¹⁰ describe how novice skydivers found the jumping out of the aircraft discomfoting, whilst experienced skydivers were seen to be anxious during the take-off and ascent of the plane. For experienced skydivers, this may be linked with the perceived lack of control experienced during this stage of the activity. As experience increases, concerns over potential negative consequences decrease. As risk acculturation occurs, the risky activity becomes more enjoyable. Creyer et al⁸ report that as experience increases, perceived risks associated with the activity diminish, and affective outcome expectancies become increasingly positive. As this occurs, many participants engage in increasingly dangerous behaviors and risk is normalized.

Over time, individuals may become desensitized to a situation. Those with experience are often unaware of, or have forgotten, how situations appear to those with limited experience.³⁹ What may appear exciting and extreme to the novice may be regarded as mundane and routine to the experienced participant.

Implications for prevention strategies

Adventure activities can and do present risk to participants; however, engagement can provide a range of benefits. The challenge is to reduce the likelihood of harm in a way that is relevant and valued and at least maintains and, if possible, increases positive benefits and the fulfillment of motives for participation. There is a need to recognize that there are differential reasons for engaging with risk; therefore a blanket approach to the management of risk may be inappropriate.

The perception of risk is not purely linked to statistical probability, magnitude, and severity of outcome, but is influenced by a range of qualitative factors such as familiarity, controllability, whether the undertaking of the activity is voluntary, the perception of costs and benefits, and needs satisfaction. Prevention strategies need to be mindful that from the perspective of participants, risk-taking behavior may be regarded as rational, justifiable, and linked to a range of perceived benefits. The attitudes and beliefs associated with the perception of risk may act as a filter to risk information. Information that goes against attitudes and beliefs may be downplayed; greater emphasis may be placed upon information that supports a chosen response to risk. To reduce the likelihood of the rejection of safety initiatives, this attitudinal framework needs to be recognized and, where possible, accommodated.

Risk-taking behavior may be rewarded through factors such as social approval and enhanced esteem; risk-avoidance behavior may result in negative consequences such as inconvenience and discomfort. There is a need to ad-

dress the balance of these factors. One approach is through the development of safety equipment and skills that increase the likelihood of desired outcomes. This may be complemented by the acquisition of such skills and equipment being seen to be a valued goal. If non-occurrence of incidents reinforces risk-taking behavior and if preventative action is linked to the perception of likelihood of being involved in an incident, the provision of appropriate, evidence-based, credible information relating to frequency and severity of occurrence may be of value. The provision of such information may have an impact upon "target risk" and "optimism bias."

Group processes can be a powerful determinant of risk-taking and risk-mitigation behavior. The socialization of participants into the culture of an activity provides opportunities for the development of skills, knowledge, and attitudes that support the effective management of risk. Social pressure may be a more powerful determinant of safety behavior than legislation, particularly in environments where enforcement is difficult. Working with social groupings associated with an activity may provide opportunities for influencing individual behavior.

Conclusion

Individuals and groups view risks in different ways. These differential perceptions may reflect differing social norms, experience and skill levels, and individual differences. Perceptions of risk that do not concur with those of socially defined experts are not necessarily wrong; they may be building different factors into the risk equation. These differential perceptions can provide invaluable information for the assessment of risk and the development of mitigation strategies that are relevant and acceptable (or even desirable) to those involved in risk-taking activities.

Unless sensitive to the meaning of risk to the individual, the social context of behavior and participants' perception of risk, well-intentioned safety initiatives may lack credibility and be rejected.

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