SENSATION-SEEKING AND SPORT MOTIVATION

AMONG BOARD SPORT COMPETITORS

THESIS

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CHAPTER I

INTRODUCTION

With the understanding that what one individual does in New York City can affect an unrelated individual in Beijing, "risk" in its many forms remains one of the most researched concepts in the western world today (Bessant, Hil and Watts, 2003). For social scientists, policy makers, health specialists, and psychologists alike understanding factors that put people at risk and factors that motivate people to take risks provides answers to problems (i.e., antisocial behaviors, sexually transmitted disease, accidental death) that continue to plague our society (Adams, 1995).

Risk-taking has always been a part of the human experience (Adams, 1995). While most people choose to be cautious when posed with a choice that may provide extreme or adverse consequences, some choose to engage in the activity regardless of such risks (Adams, 1995).

In the field of psychology, risk-taking is studied in different contexts (Zuckerman, 1979). Social psychologists

study attitudes and values in relation to risk-taking. Psychophysiologists and psychopharmacologists study the relationship of such biological factors as genetics, hormone involvement and neurotransmitter involvement in risk-taking behavior. Personality researchers study personality traits and develop theories of personality constructs that lead to risk-taking behaviors (Zuckerman, 1979). According to Lauriola and Levin (in press) and Zuckerman (1979, 1994), personality research related to risk-taking remains common to most types of research regarding risk-taking behavior.

Personality researcher Marvin Zuckerman (1979, 1994) developed the theory of Sensation-seeking to explain risk-taking behavior. According to Zuckerman (1979, 1994), individuals do not take risks just for the sake of taking risks. Instead, individuals seek out sensations that may come at the cost of risk. Housed under the broad trait of Impulsive Sensation-seeking, sensation-seeking is defined as, "the pursuit of novel, intense, and complex sensations and experiences, and the willingness to take physical, social, legal, and financial risks for the sake of such experiences" (Zuckerman, 1994).

According to Zuckerman (1979, 1994), Sensation-seeking comes in four forms: (1) Disinhibition, (2) Experience

Seeking, (3) Boredom Susceptibility, and (4) Thrill and Adventure Seeking. Each Sensation-seeking type is characterized by different risky behaviors including gambling, risky sexual practices, and alcohol and drug abuse (Zuckerman, 1994). Specifically, Sensation-seeking has been well-studied in relation to participation in high-risk sport (Zuckerman, 1994). It has been well-documented that those who participate in high-risk sports like sky-diving, mountaineering, kayaking, and surfing tend to be higher in all four forms of sensation-seeking than those who participate in low-risk sports such as swimming, marathon running, and golf (for reviews see Jack and Ronan, 1998; see also Zuckerman, 1994).

Personality alone cannot explain risk-taking behavior, especially in the context of sport. Motivation as studied by sport and exercise psychologists provides another means by which to study risk-taking behavior in sport (Diehm and Armatas, 2003; Zuckerman, 1994). To explain an individual's general preference for and consistent involvement in a particular sport, Deci and Ryan (1995) developed the Sport Motivation Scale based on the tenets of Self-Determination Theory (Deci and Ryan, 1995). According to this model, an athlete's motivational state can be understood as Intrinsic, Extrinsic, or Amotivated.

Although only one study exists evaluating sport motivation in high-risk sport athletes (Diehm and Armatas, 2003), Zuckerman (1994) suggests that there may be a relationship between sensation-seeking and intrinsic rewards in high-risk sport.

Because Sensation-seeking is a personality construct, by definition individuals who are sensation-seekers are unchangeable in their need for varied and complex sensations and experiences. According to Zuckerman (1994), sensation-seekers have always sought out various means by which to satisfy these needs. Today antisocial activities such as gambling, risky sexual practices, and drug and alcohol abuse can be related to sensation-seeking. On the other hand, sport and recreation provides an outlet for sensation-seeking in its most pro-social form (Zuckerman, 1994). As has been stated, the less populated sports of mountaineering, sky-diving, kayaking, and surfing have been well-documented as activities sought out by sensation-seekers (Zuckerman, 1994). However, the relationship of sensation-seeking to the most popular recreational activities participated in today, remain unstudied.

While originally thought of only as activities sought out by counter-culture youth, today millions of people throughout North America and the world participate in

skateboarding, snowboarding, and wakeboarding each year (National Sporting Goods Association [NSPGA], 2003). These so-called extreme sports are emerging as a means to sell a product in media campaigns and have even been promoted as a "Verb" by the Centers for Disease Control in a campaign to promote physical activity in adolescents (Centers for Disease Control [CDC], 2003).

As a result of the growth of participation in skateboarding, snowboarding, and wakeboarding, hospital and emergency room visits have increased and are expected to continue increasing (US Consumer Product Safety Commission, 2003). This increase in skateboard, snowboard, and wakeboard injury costs society economically and is a concern for policy makers, public health and safety officials, as well as the health professionals that treat these individuals (CDC, 2003; Mawson et al., 1988).

Research Questions

The research study presented in this paper sets out to answer the question of whether or not those who participate in the high-risk sports of skateboarding, snowboarding, and wakeboarding are sensation-seekers. If skateboarders, snowboarders, and wakeboarders are sensation-seekers, what type are they? Also, are individuals in these sports more intrinsically motivated (motivated to participate in sport

for the sport itself), or are they more extrinsically motivated (motivated to participate in sport for reasons outside of the sport itself)?

The following chapter defines risk, sensation-seeking, and sport motivation and gives a critical review of the literature related to these constructs in high-risk sport. Because so much literature exists regarding sensation-seeking and high-risk sport, a brief outline containing the results of these studies is given. Likewise, the chapter that follows contains a review of the most recent statistics regarding participation in, and social implications of skateboard, snowboard, and wakeboard use.

CHAPTER II

LITERATURE REVIEW

Problem

Risk has been defined as the chance that a certain adverse event occurs as a result of a particular behavior (National Research Council, 1983). Whether or not a person takes a risk is dependent on their perception of the likelihood of an adverse event occurring as a result of a behavior. Risk-taking behavior depends on the extent to which an individual perceives the consequences of their behavior to be adverse (Bandura, 1986). Because individuals experience and evaluate different types of risk on any given day, risk-taking can be considered an adaptive part of the human experience (Adams, 1995). Even infants are involved in risk-taking activities. When an infant learns to crawl or a child learns to swim, the child calculates their drive for curiosity and need for excitement against the possibility of pain or failure (Adams, 1995).

In the adult world risk comes in many forms (Adams, 1995). For example, when investing money in the stock market, an individual balances the desire for profit against the understanding that they could lose money. The risk of getting a ticket or getting injured is weighed against the benefits of safety in decisions to wear a seatbelt (Adams, 1995).

While every human being makes choices involving risk, the factors that play a role in that person's choice are complex and dependant on that individual's perception of risk (National Safety Council, 1983). Adams (1995) suggests that a distinction between actual and perceived risk is not easy to make because risk is culturally constructed. In other words, the adverse nature of particular events and their probability are inherently subjective (Adams, 1995). For example, some games that children engage in and see as fun would be perceived by an elderly person as too dangerous. Likewise, some people will decide to be cautious while others will ignore caution and engage in "high-risk activities" (Adams, 1995). Antisocial risk-taking behaviors such as, drug and alcohol abuse, risky sexual practices, and physically risky pursuits lead to economic and social costs that have long

troubled researchers and public health officials alike (Zuckerman, 1979).

As a result of risk-taking in sexual practices (i.e. lack of condom use and multiple partners), sexually transmitted diseases cost the United States billions of dollars each year. According to the Healthy People 2000 and Healthy People 2010 objectives, the United States listed sexually transmitted disease prevention as a priority (National Institutes of Health [NIH], 2004). Yet risky sexual practices remain a concern. According to the CDC (2003), HIV/AIDS was the seventh leading cause of death for young adults age 15-24 years in 2001. Also in 2001, there were 278 cases of Chlamydia per 100,000 persons in the United States. Syphilis rates are still increasing, and teenage pregnancy remains a concern.

Risk-taking in relation to drug and alcohol use impacts individuals, families, and communities both interpersonally and economically. A recent study found that the economic cost of both drug and alcohol abuse was $245.7 billion dollars in 1993 (NIH, 2004).

Unintentional injury and accidental death costs the United States $586.3 billion per year (National Safety Council, 2003) and were responsible for 37% of all Emergency Department visits in the year 2000 (CDC, 2003).

Accidental injury remains the leading cause of death for individuals age 15-24 years (CDC, 2003). Studies regarding the relationship of age to sensation-seeking reveal that the greatest risk-takers are young males included in the 15-24 year age bracket (Zuckerman, 1994).

Sensation-seeking Personality

Researchers from various fields study risk-taking. Social scientists study how risk-taking affects society, as well as the values and attitudes involved in risk-taking behavior (Zuckerman, 1979). Psychophysiologists and psychopharmacologists study the biological components of risk-taking behavior. This includes such factors as genetics, neurotransmitter involvement, and hormone involvement in risk-taking behavior (Zuckerman, 1979). Personality psychologists study the relationship between personality characteristics and one's willingness to take risks (Zuckerman, 1995). In a recent review of literature on personality and risk-taking, Lauriola and Levin (in press) observed that one of the most investigated personality traits was sensation-seeking.

Sensation-seeking was first isolated as a personality construct in 1960 after experimental psychologist Marvin Zuckerman identified it during experiments on sensory deprivation (Zuckerman, 1979). Sensation-seeking is

defined as "the pursuit of novel, intense and complex sensations and experiences, and the willingness to take physical, social, legal and financial risks for the sake of such experiences" (Zuckerman, 1979, 1994). Sensation-seeking personality types are primarily concerned with experiencing sensations rather than with seeking out risks. If necessary, such individuals will pursue the experience of sensation at the cost of risk (Zuckerman, 1994).

Zuckerman's experiments in sensory deprivation revealed that no reliable instrument that measured individual preferences for optimal levels of stimulation and arousal existed (Zuckerman, 1979, 1994). Although Zuckerman believed that people choose different life activities because they differ in their optimal levels of stimulation and arousal (Zuckerman, 1979, 1994), that hypothesis remained untested. Over the space of approximately 17 years, Zuckerman developed and modified a psychometric tool to successfully measure this construct. In its fifth form, the Sensation-seeking Scale V (SSS-V) remains the most widely used measure of sensation-seeking (Lauriola and Levin, in press).

The SSS-V measures total sensation-seeking (TSS) and its 4 subscales: Experience-Seeking (ES), Disinhibition

(DIS), Boredom Susceptibility (BS), and Thrill and Adventure Seeking (TAS).

Sensation-Seekers who score high in Experience Seeking (ES) are considered by observers as "nonconformists" who tend to seek unusual sensations through the mind and the senses. These individuals may find their need for unusual sensations met through such external experiences as spontaneous travel, music, and art, or internally through the use of hallucinogenic drugs (Zuckerman, 1994). The Sensation-seeker who scores high in Disinhibition (DIS) seeks to meet their need for sensation by casting off social inhibition. These individuals are more likely to engage in antisocial activities like gambling, drinking, partying, and risky sexual activity (Zuckerman, 1994). An individual who scores high in Boredom Susceptibility (BS) is a Sensation-seeker who is characterized by an aversion for repetitive experiences of any kind. These sensation-seekers experience extreme restlessness when in inescapable situations that are routine or where an individual is surrounded by the same people day in and out (Zuckerman, 1994). Finally, the most clearly defined factor of sensation-seeking for both males and females is Thrill and Adventure Seeking (TAS). Zuckerman (1994) describes these individuals as seekers of excitement in risky but socially

acceptable activities, such as sky-diving, mountaineering, and race-car driving.

Subsequent research has related the sensation-seeking personality with antisocial activities like smoking and drinking, risky sexual practices, gambling, and prostitution (Zuckerman, 1994). Specifically, McDaniel and Zuckerman (2003) found that Sensation-seeking coupled with the personality trait of impulsiveness could predict gambling interest and behavior. These findings supported the results of other research that used the SSS-V to predict frequency of gambling behavior (for reviews see Dickerson and Baron, 2000). Also in regard to sensation-seeking and risky sexual practices, White and Johnson (1988) found that Disinhibition (DIS) was related to frequency of intercourse in adolescents. Likewise, O'Sullivan, Zuckerman, and Kraft (1996) found that when compared with a control group, prostitutes scored much higher on Impulsiveness and Sensation-seeking. This study agreed with other research relating sensation-seeking to antisocial personality traits (O'Sullivan, Zuckerman, and Kraft, 1996). Other studies have linked alcohol and drug abuse to sensation-seeking (Zuckerman, 1994). For example, Brook et al. (1995) found that sensation-seeking was one

personality trait that predicted marijuana use among adolescents and young adults.

Not only has Sensation-seeking been studied in individuals with antisocial behaviors, but also among those who participate in physically risky sports. Zuckerman (1994) classified sports according to the associated risks involved. Those sports characterized by high levels of acute danger associated with injuries are at the opposite end of the continuum from those sports associated with little or no risk. For example, skydiving, hang-gliding, scuba-diving, kayaking, skiing, mountaineering, and surfing are classified as high-risk (Diehm and Armatas, 2003; Jack and Ronan, 1998; Zuckerman, 1994). Sports at the low-risk end of the continuum include low-risk sports like marathon running, golf, and swimming (Diehm and Armatas, 2003; Jack and Ronan, 1998; Zuckerman, 1994). Table 1 provides a list and summary of research regarding many high and low risk sports and their relationship to Sensation-seeking as measured by the SSS-V (Jack and Ronan, 1998).

Table 1

Research relating sensation-seeking to sports (Jack and Ronan, 1998; Zuckerman, 1994)

Sport(s)	Author(s)	Experimental (sex, N)	Control (sex, N)	Differences
		High-risk sports		
Hang-gliding, Auto-racing	Straub (1982)	Hang-gliders (M=33); Auto-racers (M=22)	Bowlers (M=25)	Gliders>bowlers Total TAS, ES Racers>bowlers on Total ES, Dis, BS
Scuba Diving (Novice)	Heyman and Ross (1980)	Novice divers (M=29; F=18)	Same-sex students	Divers higher on Total
Skiing	Connolly (1981)	Skiers (M=27; F=18)	Non-skiers from health spa (matched)	Skiers higher on Total, TAS, Ski instructors>skiers Total, TAS, ES
Mountain Climbing	Cronin (1991)	Climbers (M and F=21)	College Students (M and F=20)	Climbers>controls on Total, ES, TAS
Alpinists, mountaineers high-risk sportsmen	Freixanet (1991)	Alpinists (M=29) mountaineers (M=72), sportsmen	Participants not engaged in any risk activities (M and F=54)	Alpinists, mountaineers, sportsmen>controls on TAS, ES, Total
White-water	Campbell et al. (1993)	Canoe and Kayak paddlers (M=34; F=54)	Normative Scale	Paddlers higher on TAS
Surfing	Diehm and Armatas (2003)	Surfers (M=30; F=11) Golfers (M=29; F=15)	Golfers (M=29; F=15)	Surfers>golfers on Dis, TAS, ES

Table 1

Continued

Low-risk Sports				
Running	McCutcheon (1980)	Runners (M=42; F=20)	Non-runners (matched)	Male runners lower on Dis, Female runners lower on Total, TAS
Gymnastics	Straub (1982)	Gymnasts (F=28)	Bowlers (F=31)	No differences on SSS-V scales
Physical Education Majors	Wykoff (1982)	Physical Education (M=52; F=60)	SSS norm group	No difference on any SSS-V scales

While individuals who participate in high-risk sport score higher than those who participate in low-risk sports on Thrill and Adventure Seeking (TAS), most studies reveal that those who participate in high-risk sports score higher on Total Sensation-Seeking (TSS) and other subscales of the SSS-V (For reviews see Jack and Ronin, 1998; see also Zuckerman, 1994). Most notably, high-risk sport athletes tend to score higher than low-risk sport athletes on Experience Seeking (ES) and Disinhibition (DIS) (Zuckerman, 1994). Because of the relationship of Experience Seeking (ES) and Disinhibition (DIS) to antisocial behaviors, socioeconomic and sport participation factors are of interest. Most risky sports are costly to engage in and are therefore unavailable to individuals in lower socioeconomic groups (Zuckerman, 1994). Some theorists

suggest that high-risk sport may provide a pro-social outlet for antisocial activities in populations of higher socioeconomic standing (Zuckerman, 1994).

Sport Motivation

Because the concept of risk is so complex, personality alone cannot explain an individual's motivation to participate in high-risk sport. Zuckerman (1994) suggested that motivation to participate in high-risk sport could also be explained by the intrinsic rewards an individual experiences when mastering certain dangerous tasks. In the field of Sport and Exercise Psychology, the best documented theory to explain intrinsic and extrinsic motivation in sport is Self-Determination Theory (Deci and Ryan, 1995).

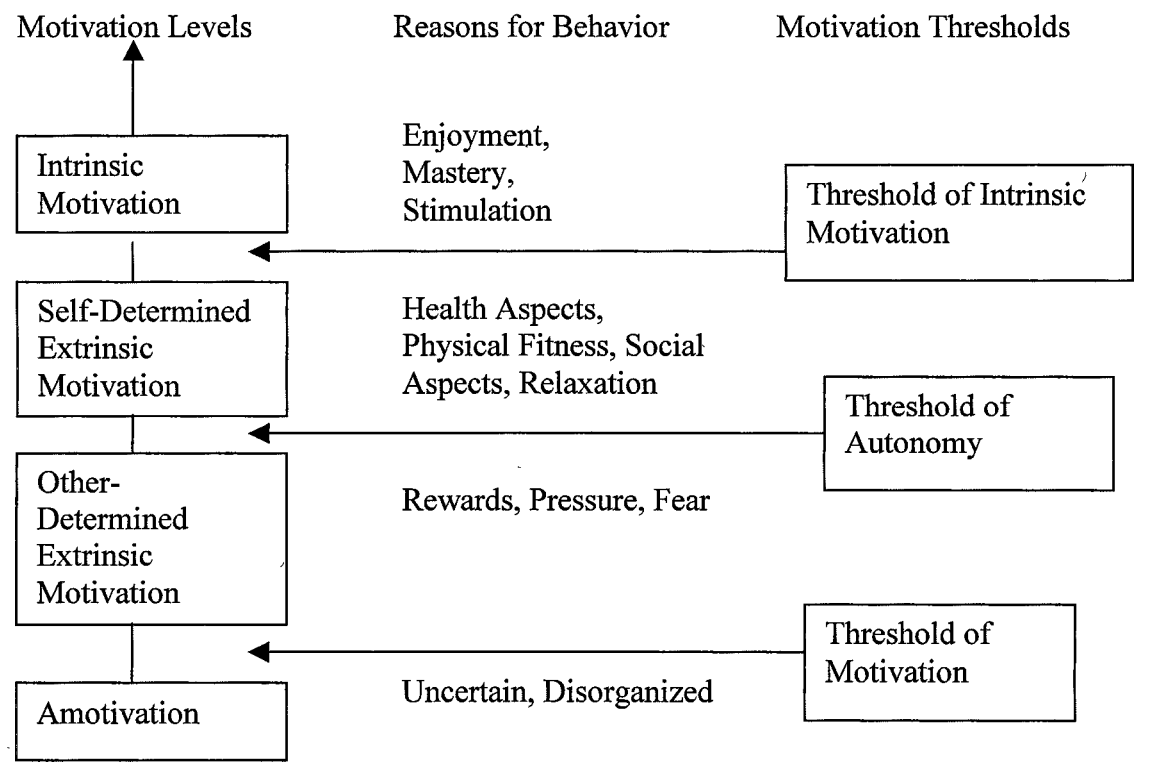
Self-determination Theory (Deci and Ryan, 1995) is based on the premise that all individuals possess three innate psychological needs: (1) the need for autonomy, (2) competence, and (3) relatedness. The need for autonomy is characterized by the perception that behaviors are freely chosen and an internal locus of control (i.e. belief that an individual has control over his/her actions and that what that individual does directly effects the outcomes of his/her actions). Competence is characterized a sense of mastery and a perception of being effective in the things an individual does. Relatedness is a construct

characterized by satisfaction and involvement with the social world (Kilpatrick, Hebert, and Jacobsen, 2002).

According to self-determination theory, the degree to which these needs are met provides a prescription for an individual's motivational state. This motivational state ranges along a continuum of motivation from amotivated, to extrinsically motivated, to intrinsically motivated. Figure 1 provides a representation of this continuum.

Figure 1

Motivation continuum (Kilpatrick, Hebert, and Jacobsen, 2002)



Intrinsic Motivation is the most desirable form of motivation (Pelletier et al., 1995). It refers to engaging in an activity purely for the pleasure and satisfaction derived from doing the activity (Pelletier et al., 1995). Deci and Ryan (1995) suggest that intrinsic motivation stems from the innate psychological needs of competence and self-determination. Likewise, intrinsic motivation exists in the absence of external benefits or rewards. For example, an individual who participates in physical activity for the sole purpose of perfecting a technique is intrinsically motivated (Pelletier et al., 1995). Further research regarding Intrinsic Motivation has lead some researchers to believe that there are 3 types of Intrinsic Motivation: (1) Intrinsic Motivation to Know, (2) Intrinsic Motivation to Accomplish Things, and (3) Intrinsic Motivation to Experience Stimulation (Pelletier et al., 1995). When an individual is involved in sport because they are intrinsically motivated to know, they participate in their sport for the enjoyment and satisfaction they feel while learning, exploring, or trying to understand something new (i.e. learning new training techniques) (Pelletier et al., 1995). When a sport participant practices their sport because of an intrinsic motivation to accomplish things, they are doing so for the pleasure they

feel when they are accomplishing or creating something (i.e. mastering a training technique) (Pelletier et al., 1995). Finally, when an individual participates in sport through intrinsic motivation to experience stimulation, they are participating in order to live exciting experiences (i.e. feelings associated with experiencing flow and peak performance) (Pelletier et al., 1995).

Extrinsic motivation is the next level of motivation in self-determination theory. Extrinsic motivation is characterized by individuals engaging in a variety of behaviors as a means to an end (i.e. external rewards or to avoid punishment) and not for their own sake (Pelletier et al., 1995). Some theorists further divide extrinsic motivation into 3 types: (1) External Regulation, (2) Introjection, and (3) Identification (Pelletier et al., 1995). Sport participants that are externally regulated participate in sport for external sources such as material rewards or constraints of others (i.e. seek praise, avoid criticisms) (Pelletier et al., 1995). Individuals who participate in sport because they are externally motivated through introjection are internalizing formerly external sources of motivation. The sport involvement of these individuals is reinforced by internal pressures such as guilt or anxiety (Pelletier et al., 1995). Individuals who

participate in sport because they value and judge their participation in sport to be important are operating through the extrinsic motivation of identification. These sport participants actively choose to practice their sport, but perform their sport in order to achieve personal extrinsic goals (Pelletier et al., 1995).

Finally, the third form of motivation is amotivation (Pelletier et al., 1995). According to self-determination theory, an individual who lacks organized motivation and believes their efforts will not lead to a desired outcome is amotivated (Ryan et al., 1997). Because they experience a lack of control over their actions and the outcomes of their actions, individuals that are amotivated do not experience autonomy in relation to their sport (Pelletier et al., 1995). Likewise these individuals do not have a feeling of competence (mastery and effectiveness) in relation to their sport (Pelletier et al., 1995). Amotivated individuals are often characterized by such factors as poor self-image or poor image of activity, lack of interest, time, or knowledge of activity (Kilpatrick, Hebert, and Jacobsen, 1995). Therefore, their need for relatedness in relation to their sport is seriously undermined. In the context of sport, when an individual

becomes amotivated it is not likely that they will continue to practice their sport (Pelletier et al., 1995).

In order to adequately and independently assess an individual's motivational level, Pelletier et. al. (1995) developed the Sport Motivation Scale (SMS). The SMS has been shown to most reliably measure Total Intrinsic Motivation (IM), Total Extrinsic Motivation (EM), and Amotivation (Vallerand and Fortier, 1998). Today, the SMS remains the most widely used assessment tool to measure general or usual intrinsic motivation, extrinsic motivation, and amotivation to participate in a given sport.

Most of the research conducted using the SMS has been concerned with the duration and extent of sport participation based on levels of motivation (Ryan et al., 1997). Studies show that intrinsically motivated individuals adhere to activity better than individuals who are extrinsically motivated (Ryan et. al., 1997).

Type of activity may also play an important role in stimulating intrinsic motivation. For example, Fredrick and Ryan (1993) found that intrinsic motives were found primarily in sport, while exercise involvement typically develops in response to a combination of extrinsic and intrinsic motives. Moreover, researchers who compare the

nature of sport participation to exercise participation find that exercise participants are motivated more by health and fitness motives, while sport participants are motivated by enjoyment and satisfaction (Kilpatrick, Hebert, and Jacobsen, 2002). Still, few studies have been conducted to understand initial preference for, and participation in specific sports.

Babbitt, Rowland, and Franken (1990) found that individuals with lower sensation-seeking tendencies report extrinsic reasons for participation in low-risk physical activity. They found that female participants in the low-risk activity of aerobics scored significantly lower than Australian female norms on the SSS-V. These participants also reported extrinsic reasons such as, health, appearance, and weight control as motivation to participate in aerobics classes.

Diehm and Armatas (2004) conducted the only study regarding high-risk sport and both Sensation-seeking and Sport Motivation. They found that recreational and competitive surfers of both sexes scored significantly higher than a comparative group of golfers on Disinhibition (DIS), Thrill and Adventure Seeking (TAS), and Experience Seeking (ES) as measured by the SSS-V. Surfers also scored significantly higher than golfers on Intrinsic Motivation

as measured by the SMS. However, there was no significant difference between the surfers and golfers on Extrinsic Motivation as measured by the SMS.

High-risk Sport Population

To date, research regarding personality and motivation to participate in high-risk sport has focused mainly on relatively obscure sports. For example, according to a 2002 survey by the National Sporting Goods Association (NSPGA): 3.5 million people ages 7 and over participated in kayaking or rafting, 2.1 million participated in open water scuba diving, and 1.0 million participated in surfing (see Table 2). There were not enough participants in many of the other high-risk sports popular to Sensation-seeking literature to be surveyed.

In comparison to kayaking, scuba diving, and surfing, the same survey by the NSPGA found 9.0 million skateboard participants, 6.3 million snowboard participants, and 2.3 million wakeboard participants (see Table 2). For skateboard and snowboard, this is an increase of 6.2 % and 22.9% respectively since the year 2000 (NSPGA, 2003). This exponential increase in board sport participation should be of no surprise considering the current media attention these sports receive.

Table 2

2002 sport participation by group (NSPGA, 2003)

Sport	Participants
Kayaking, Rafting	3.5 million
Open Water Scuba Diving	2.1 million
Surfing	1.0 million
Skateboarding	9.0 million
Snowboarding	6.3 million
Wakeboarding	2.3 million

Note: Participants surveyed were over 7 years old and participated in sport at least one time.

Advertising campaigns from Mountain Dew, Doritos, Southwest Airlines, and many sports drink companies all contain images of athletes representing so-called extreme sports. The CDC has also jumped on the bandwagon with its promotion of skateboarding as a "Verb" in its campaign to increase child and adolescent physical activity (CDC, 2003). The advent and popularity of the X-Games has brought professionals of extreme sports into the living rooms of people all over the United States. Likewise the popularity of video games such as Tony Hawk Proskater allows children and adolescents of all ages to experience what used to be considered activities only sought out by counter-culture youth (Brooke, 1999).

It should also be of no surprise that coupled with the increase in popularity of extreme sports, accidents associated with participation in these sports have likewise increased. The US Consumer Product Safety Commission (2003) reported approximately 247,000 skateboard injuries treated in hospitals, doctor's offices, clinics, ambulatory surgery centers, and emergency rooms in 2001. Regarding snowboard injuries, the US Consumer Product Safety Commission (2003) released statistics in 1995 reporting an increase in snowboard related emergency room visits of 42% from the previous year.

To date, the only research that exists for the population of skateboarders, snowboarders, and wakeboarders involves accidents and effectiveness of equipment. No research exists concerning personality and motivational factors associated with involvement in the fastest growing high-risk sport groups in the United States today.

The research study described in this paper sets out to test the hypotheses described on the following page.

Hypotheses

General Hypothesis

1. After controlling for age, there will be a significant difference between the high-risk group of skateboard, snowboard, wakeboard competitors and low-risk group of golf competitors on Sensation-seeking as measured by the Sensation-seeing Scale V (SSS-V).

Specific Hypotheses

   a. The high-risk group will score significantly higher than the low-risk group on Thrill and Adventure Seeking (TAS) as measured by the SSS-V.
   b. The high-risk group will score significantly higher than the low-risk group on Experience Seeking (ES) as measure by the SSS-V.
   c. The high-risk group will score significantly higher than the low-risk group on Disinhibition (DIS) as measured by the SSS-V.
   d. The high-risk group will score significantly higher than the low-risk group on Boredom Susceptibility (BS) as measured by the SSS-V.

General Hypothesis

2. After controlling for age, there will be a significant difference between the high-risk group of skateboard, wakeboard, and snowboard competitors and the low-risk

group of golf competitors on sport motivation as measured by the Sport Motivation Scale (SMS).

Specific Hypotheses

a. The high-risk sport group will score significantly higher than the low-risk group on Intrinsic Motivation (IM) as measured by the SMS.
b. There will be no difference between the high-risk sport group and low-risk sport group on Extrinsic Motivation (EM) as measured by the SMS.

CHAPTER III

METHOD

Participants

The high-risk group of skateboard, snowboard, and wakeboard participants were recruited from team and club managers at Texas State University-San Marcos and Utah State University, as well as local skateboard, wakeboard, and snowboard shops in California, Florida, Texas and Utah. The low-risk group of golfers was recruited from teams at Texas State University and Utah State University.

100 surveys were distributed to potential snowboard participants, of these 15 were returned over a three month period. Eight of these questionnaires were removed because they were not completed. Therefore 7 usable surveys remained (7% use rate). 50 surveys were distributed to potential skateboard participants, of these 13 were returned over a two week period (26% use rate). 30 surveys were distributed to wakeboard participants, of these 14 were returned over a two week period (46.6% use rate). 60

surveys were distributed to potential golf participants, of these 29 were returned over a three month period (48.3% use rate).

The final sample consisted of a total of 63 participants. After determining that the snowboarders, skateboarders, and wakeboarders did not differ significantly on either of the scales, the 34 high-risk participants were grouped together. The 29 golfers made up the low-risk group.

The mean age for the high-risk group was 23 and the mean age for the low-risk group was 21 (see Table 3). This age difference is of concern because there remains a possibility that this could affect the results. All participants were competitive males. Competition was defined in the demographics section of the survey as competing in at least one competition over the previous year either as a professional or amateur in their respective sport. The mean for years of competition for total participants was 5 years.

Design

This research study is a two-group (high-risk and low-risk) comparison design adjusting for age. The independent variable is sport, a dichotomous variable where golf comprises the low-risk group and skateboarding,

snowboarding, and wakeboarding comprise the high-risk group. The dependent variables are subscale scores on the Sensation-seeking Scale V (SSS-V) and Total Intrinsic Motivation and Total Extrinsic Motivation scores on the Sport Motivation Scale (SMS).

Materials

Coaches, managers, and pro shop employees distributed an anonymous, self-report questionnaire to potential participants. To ensure anonymity, a self addressed stamped envelope was included in each packet. The questionnaire included 3 sections (see Appendix A, B, C, D): (1) demographic questions, (2) the SSS-V (Zuckerman, 1994), and (3) the SMS (Pelletier et al., 1995). Based on previous research, surveys were expected to take approximately 15 minutes to complete.

The demographic section (see Appendix B) contained questions regarding age, sport (skateboard, snowboard, wakeboard, golf, and any other competition level sport), level of competition (professional/amateur), and number of years of competition.

The Zuckerman (1994) SSS-V is a 40 item, forced choice response scale that measures Total Sensation Seeking with four subscales (see Appendix C): Thrill and Adventure Seeking (TAS), Experience Seeking (ES), Disinhibition

(DIS), and Boredom Susceptibility (BS); each containing ten items. Items comprising the Thrill and Adventure Seeking (TAS) subscale suggest a preference for physically risky activities such as snowboarding, skateboarding, and wakeboarding (e.g. 'I like to dive off the high board'). The Experience Seeking (ES) subscale involves choices on the SSS-V that represent the seeking of sensations through the mind and the senses (e.g. 'I often find beauty in "clashing" colors. . . '). The Disinhibtion (DIS) subscale includes items that suggest a preference for sensations sought out in social situations like parties, gambling, and sexual experiences (e.g. 'I like "wild" uninhibited parties'). The Boredom Susceptibility (BS) subscale involves items that suggest intolerance for routine or repetitive experiences of any kind (e.g. 'I get bored seeing the same old faces').

The Total Sensation Seeking scale of the SSS-V has internal consistency reliabilities from .83-.86. The ranges of reliability for the subscales are: TAS, 0.77-0.82; ES, 0.61-0.67; DIS, 0.74-0.78, and BS, 0.56-0.65 (Zuckerman, 1994).

The SMS (Pelletier et al, 1995) is 28 item seven-point Likert scale that scores responses from 1 (strongly disagree) to 5 (strongly agree) (see Appendix D). The SMS

assesses three types of motivation: amotivation, extrinsic motivation (EM), and intrinsic motivation (IM). Internal consistency reliability coefficients range from .58 to .84 and an average test-retest reliability of .70 (Pelletier et al., 1995). A higher score on Total Intrinsic Motivation suggests the individual engages in the sport for the pleasure and satisfaction derived from doing the activity. A higher score on Total Extrinsic Motivation suggests that motivations outside those inherent to the activity drive participants to compete (Pelletier et al., 1995). High scores on amotivation items indicate a total lack of motivation to compete in sport.

CHAPTER IV

RESULTS

The high-risk sport group had a mean age of 23 years and the low-risk sport group had a mean age of 21 years. A significant difference was found between these groups ($F = 10.602$, $P < .002$) on age (see Table 3). Any difference found between groups could be nothing more than age, therefore there was a need to adjust for age.

The hypotheses that the high-risk group of skateboarders, snowboarders, and wakeboarders would score significantly higher than the low-risk group of golfers on the sensation-seeking subscales and intrinsic motivation was tested using a one-way analysis of covariance (ANCOVA). Because of the significant differences found between the risk groups with respect to age, an ANCOVA was used to adjust for this age difference. In addition, a .01 level of significance was selected rather than .05 since there were six non-individual ANCOVA's needed to test the hypotheses.

As hypothesized, after adjusting for age, the high-risk sport group scored significantly higher than the low-risk sport group on three sensation-seeking subscales of the Sensation-seeking Scale V (SSS-V). A list of means and standard deviations for results from subscales of the SSS-V can be found in Table 3. The high-risk group scored significantly higher than the low-risk group on Thrill and Adventure Seeking (TAS) accounting for 9.4% of the variance (see Table 4), Experience Seeking (ES) accounting for 30.3 % of the variance (see Table 5), and Disinhibition (DIS) accounting for 15.7% of the variance (see Table 6). There was not a significant difference between the high and low-risk sport groups on the Boredom Susceptibility (BS) subscale of the SSS-V (see Table 7).

Table 3

Means and standard deviations on age and subscales of the SSS-V

	High-Risk (N=34)		Low-Risk (N=29)	
Test Subscales	M	SD	M	SD
Age	23	3.285	21	1.214
SSS-V				
TAS	8.088	1.464	6.310	2.817
ES	5.794	1.493	3.276	1.980
DIS	6.941	1.841	4.483	3.387
BS	4.706	2.067	3.586	1.937

Table 4

Thrill and Adventure Seeking ANCOVA summary

Source	DF	SS	F	Eta2
Total	62	342.413		
Age (covariate)	1	21.417		
Sport	1	32.387	6.733*	0.094
Within Groups	60	288.609		

*$p < .01$

Table 5

Experience Seeking ANCOVA summary

Source	DF	SS	F	Eta2
Total	62	282.603		
Age (covariate)	1	13.714		
Sport	1	85.558	28.001*	.303
Within Groups	60	183.332		

*p < .01

Table 6

Disinhibition ANCOVA summary

Source	DF	SS	F	Eta2
Total	62	527.714		
Age (covariate)	1	12.001		
Sport	1	82.68	11.456*	.1567
Within Groups	60	433.033		

*p < .01

Table 7

Boredom Susceptibility ANCOVA summary

Source	DF	SS	F	Eta2
Total	62	265.715		
Age (covariate)	1	6.297		
Between Groups	1	14.084	3.445	.053
Within Groups	60	245.333		

Contrary to expectations, after adjusting for age there was no difference between the high and low-risk groups on levels of Sport Motivation as measured by the Sport Motivation Scale (SMS) (see Table 8). According to the ANCOVA, there was no significant difference on levels of Intrinsic Motivation (IM) between the high and low-risk sport groups (Table 9). There was also no significant difference on levels of Extrinsic Motivation (EM) between the high and low-risk sport groups (Table 10).

Table 8

Means and standard deviations for high and low-risk sport groups on IM and EM scales of the SMS

	High-Risk (N=34)		Low-Risk (N=29)	
Test Scales	M	SD	M	SD
SMS				
IM	67.676	8.452	64.483	9.545
EM	52.206	10.239	57.000	15.910

Table 9

Intrinsic Motivation ANCOVA summary

Source	DF	SS	F	Eta2
Total	62	5068.317		
Age (covariate)	1	22.11		
Sport	1	137.555	1.681	.027
Within Groups	60	4908.653		

Table 10

Extrinsic Motivation ANCOVA summary

Source	DF	SS	F	Eta2
Total	62	10907.27		
Age (covariate)	1	14.391		
Sport	1	359.735	2.049	.034
Within Groups	60	10533.143		

The results of this study yielded differences between groups on subscales of the SSS-V but not the SMS. In order to be sure the subscales of the SSS-V and SMS were measuring different constructs, a Pearson Correlation Matrix was run. The results of the Pearson Correlation revealed no correlation between the instruments.

CHAPTER V

DISCUSSION

Specific Implications

After considering and adjusting for the factor of age, results from the data of this research study were consistent with the literature concerning high-risk sport and the sensation-seeking personality construct. As predicted, the data from this research study revealed that the skateboarders, snowboarders, and wakeboarders in the high-risk group were higher sensation-seekers compared to the low-risk group of golfers. Specifically, the high-risk sport group was greater in Thrill and Adventure Seeking (TAS), Experience Seeking (ES), and Disinhibition (DIS) than the low risk group. Consistent with the Diehm and Armatas (2003) study, Experience Seeking accounted for the most variance (30.3%) followed by Disinhibition (15.7%) and Thrill and Adventure Seeking (9.4%).

Because items on the Sensation-seeking Scale V (SSS-V) that measure Thrill and Adventure Seeking (TAS) are specific to sport, it is not surprising that this factor

would play a significant role in distinguishing high-risk sport from low-risk sport. After a review of the most recent literature, Zuckerman (1994) suggested that high scores on the Thrill and Adventure Seeking (TAS) subscale of the SSS-V represent the physical risk-taking element in high-risk sport. In this research study however, Thrill and Adventure Seeking (TAS) was expected to have greater significance in comparison to the other sensation-seeking subscales. Item analysis from returned surveys revealed that many of the wakeboarders selected the non sensation-seeking choice, "I would not like to take up the sport of water skiing." Other wakeboarders selected that they "would like to take up the sport of water skiing," but crossed out the words "water skiing" and wrote in, "wakeboarding." Likewise, most snowboarders selected the non-Thrill and Adventure Seeking item, "skiing down a high mountain slope is a good way to end up on crutches." Other snowboarders chose the Thrill and Adventure Seeking activity, "I think I would enjoy the sensations of skiing very fast down a high mountain slope," as their preference, but replaced the word "skiing" with "snowboarding."

Wakeboard and snowboard participants engage in comparative high-risk sports to water skiing and snow skiing respectively. Cultural prejudices and

colloquialisms of new high-risk sport participants effected results from the Thrill and Adventure Seeking subscale in this study. Cultural prejudices and colloquialisms of participating sport groups should be considered in future research using the Sensation-seeking Scale V (SSS-V).

The result that Experience Seeking (ES) accounted for most of the variance concerning this data is not surprising given the substantial literature that includes Experience Seeking (ES) as one of the most distinguishing forms of sensation-seeking in high risk sports (for reviews see Zuckerman, 1994). Not only does Experience Seeking (ES) distinguish between levels of risk in sports, but also in comparison to levels of experience in high-risk sport participation (Zuckerman, 1994). In research studies comparing elite high-risk sport participants to other participants of high-risk sports, Experience Seeking (ES) and Thrill and Adventure Seeking (TAS) accounted for the greatest difference in sensation-seeking among the groups (Breivik, 1991 as cited by Zuckerman, 1994). Likewise, Connolly (1981) found Experience Seeking (ES) and Thrill and Adventure Seeking (TAS) to be elevated in the more advanced groups of snow ski instructors when compared to recreational skiers.

While Thrill and Adventure Seeking (TAS) may account for physical risk-taking in high-risk sport, the higher scores in Experience Seeking (ES) found in this and other studies concerning high-risk sport participation suggests that individuals in these sports are not primarily seeking out physical thrills and adventure (Zuckerman, 1994). Rather, individuals in high-risk sport may also be seeking out general kinds of mental and sensory arousal in connection with their sport (Zuckerman, 1994). Items that make up the Experience Seeking (ES) subscale relate to the desire to have a variety of unusual sensory experiences (Jack and Ronan, 1998). According to Zuckerman (1994), these sensory experiences are found through art, music, travel, psychedelic drugs, and by association with unusual persons ("punks" and "Homosexuals"). Given the populations surveyed, the finding that Experience Seeking (ES) accounted for most of the variance among skateboarding, snowboarding, and wakeboarding is of interest. Historically, individuals involved in at least skateboarding and snowboarding have considered themselves "anti-establishment" and "counterculture" (Brooke, 1999). Although skateboarding, snowboarding, and wakeboarding are growing in popularity (NSPGA, 2003), the label "extreme sport" indicates that participation in these sports is rare

or unusual. Belonging to an "extreme sport" group may satisfy the needs of skateboarders, snowboarders, and wakeboarders to experience unusual sensations as a result of an unusual group association. Likewise, as Zuckerman (1994) suggests, the sensations inherent to high-risk sport itself also provide a means by which to satisfy the need for varied and complex sensory experiences. The relationship of Experience Seeking (ES) to antisocial behaviors may be of concern regarding this population. But, in line with Zuckerman's (1994) theory, skateboarding, snowboarding, and wakeboarding may provide a pro-social outlet for meeting Experience Seeking (ES) needs.

With the exception of the Diehm and Armatas (2003) and the Zaleski (1984 as cited by Zuckerman, 1994) studies, previous research concerning sensation-seeking and high-risk sport does not list Disinhibition (DIS) as a major distinguishing factor. The Disinhibition (DIS) subscale of the SSS-V lists questions that assess social risk-taking. Such items as, "I feel best after taking a couple of drinks" and "I like 'wild' uninhibited parties" suggest risk-taking that Zuckerman (1994) believes is contrary to the careful focus and planning required to engage in high-risk sport. The data from this research study however, found Disinhibition (DIS) to account for quite a bit

(15.7%) of the variance among sport. With the understanding that historically skateboarding (snowboarding followed this trend as well) has been considered a sport for a fringe group of youth in the United States (Brooke, 1999), it can be reasoned that skateboarding and snowboarding are inherently social. Social importance and group identity of skateboarding, snowboarding, and wakeboarding have been documented by the graphics and videos of these groups throughout their history (Brooke, 1999). Stickers proclaiming "Skateboarding is not a crime!" and documentaries of the early self proclaimed "skate-punk" groups Dog-Town and Z-Boys and the Bones Brigade depict a self-proclaimed anti-establishment culture in which group identification and social interaction is of great importance (Brooke, 1999). Though based on a broader level, the anti-establishment group identification and social nature of snowboarders, skateboarders, and wakeboarders is still depicted by the groups' graphics, games, and videos today (Brooke, 1999). With the growth in popularity and participation in skateboarding, snowboarding, and wakeboarding (NSPGA, 2003), social aspects of these sports have also increased in importance. The relationship of Disinhibition (DIS) to the social nature of these sport groups deserves further examination.

Contrary to the hypothesis that there would be a difference between high and low-risk sport groups on Boredom Susceptibility (BS), the results from this data showed no difference between high and low-risk sport groups in this study. Diehm and Armatas (2003) suggested this result might be due to the nature of the sports examined. They stated that both surfing (high-risk) and golfing (low-risk) require a great deal of patience concerning the time required for wave selection and shot selection respectively. The sports of skateboarding, wakeboarding and snowboarding surveyed in this study are inherently variable, thus the lack of difference on the Boredom Susceptibility (BS) subscale from this study conflict with the idea that boredom susceptibility is related to the patience required by environmental components of sport. Rather, the lack of significance on Boredom Susceptibility (BS) in this study may be due to the patience and focus required for competition in a sport. Skateboard, wakeboard, and snowboard competitors must practice a technique over and over until it is perfected and consistent. The same holds true for a golf competitor's technique. Regardless, given the comparatively low reliability of the Boredom Susceptibility (BS) subscale (0.56-0.65) (Zuckerman, 1994), lack of difference between

the high and low-risk sport groups in this study is understandable and consistent with previous research findings (Diehm and Armatas, 2003; Jack and Ronan, 1998).

Results from the data of this research study likewise did not support the hypothesis that there would be a difference between the high-risk group of skateboard, snowboard, and wakeboard competitors when compared to the low-risk group of golf competitors on motivation. Specifically, the high-risk sport group and low-risk sport group did not differ to each other in respect to Intrinsic Motivation (IM). This result was not consistent with results from the Diehm and Armatas (2003) study and suggests that competition, rather than risk, plays a role in Intrinsic Motivation (IM). Unlike the Diehm and Armatas (2003) study, this study only sampled competition level athletes leaving no control group for competition. Previous research regarding the role of competition in sport motivation reveals that sport participants tend to be more intrinsically motivated than those who participate in exercise. For example, when compared with exercise groups, competitive athletes show greater Intrinsic Motivation (IM) (Frederick and Ryan, 1993; Stokes and Frederick-Recascino, 2003).

As predicted, there was also no difference on levels of Extrinsic Motivation (EM) between the high and low-risk sport groups in this study. This is consistent with the Diehm and Armatas (2003) study that suggested that reasons other than risk might exist for extrinsic motivation towards sport. Further research is needed in respect to the role of competition and sport motivation in high and low-risk sport participation.

General Implications

Because of the unique population surveyed in this research study, the results of this research study provide meaningful insight for many professionals including personality researchers, sport psychologists, health professionals, and policy makers. The results from this study suggest that sensation-seeking rather than sport motivation is a factor that accounts for a competitor's participation in the high-risk sports of skateboarding, snowboarding, and wakeboarding.

For personality psychologists, the data from this research study adds to the current literature by finding that personality plays a significant role in the high-risk sport participation of skateboard, snowboard, and wakeboard competitors. The data from this study also suggests that competition plays a role in motivation. More research

needs to be conducted to understand the relationship level of sport participation (i.e. competition, recreation) plays in high-risk sport involvement and Sensation-seeking personality.

The role socioeconomic status plays in relation to sensation-seeking behavior is valuable for personality researchers as well as social scientists and public health officials. As Farley (as cited by Zuckerman, 1994) and Diehm and Armatas (2003) suggest, high-risk sports may provide a pro-social outlet for what would otherwise be antisocial behavior. The data from the sport participants in this study suggest that skateboard, snowboard, and wakeboard competitors score higher on areas of sensation-seeking that are related with antisocial behaviors (see Zuckerman, 1994). Of the high-risk sports surveyed in this research study, skateboarding is the most accessable to individuals from a variety of socioeconomic backgrounds. All that is required to participate in skateboarding is a relatively inexpensive board and urban terrain. With the new trend toward street style riding, skateboard use is growing in inner-city areas (Brooke, 1999). Therefore, skateboarding may provide a pro-social outlet for sensation-seekers from lower socioeconomic backgrounds. Further research exploring socioeconomic status and its

relationship to skateboarding as a possible pro-social outlet for sensation-seeking will provide meaningful information for personality researchers regarding the theory that high-risk sports provide pro-social outlets for antisocial behavior. Studying skateboard use as a pro-social outlet for antisocial behavior in lower socioeconomic groups will likewise provide meaningful information for social scientists and public health and safety officials who develop and implement prevention programs for antisocial behaviors.

The results from the data of this research study provide meaningful insight for policy makers as well. Skateboarders, snowboarders, and wakeboarders scored significantly higher on levels of Experience Seeking (ES) and Disinhibition (DIS) than the low-risk group of golfers. As has been discussed, Experience Seeking and Disinhibition have been related to many antisocial behaviors (gambling, drug and alcohol abuse, risky sexual practices) that are costly to society (CDC, 2004; NIH, 2004; Zuckerman, 1994). If high-risk sport provides a pro-social outlet for what would otherwise be antisocial behavior, providing a safe, accessible place (i.e. public skateboard parks) for individuals to participate in skateboarding, snowboarding,

and wakeboarding would encourage high-risk sport as a pro-social means by which to satisfy sensation-seeking needs.

Policy makers and government officials must recognize that participation in skateboarding, snowboarding, and wakeboarding is rapidly growing and is expected to continue growing (NSGA, 2003). By understanding that participation in these sports is driven by a personality construct (sensation-seeking), policy makers should understand that simply posting a "NO SKATEBOARDING" sign is not going to keep individuals that participate in skateboarding and snowboarding from potentially destroying public parks and other urban areas. Likewise, if policy makers ignore the idea that sensation-seeking is a personality trait that drives individuals to participate in skateboarding, snowboarding, and wakeboarding, accidents and injuries encountered in public places will continue to increase. Monitored public parks and safety equipment use are essential to help alleviate cost and injury problems associated with skateboard and snowboard use in urban settings (Pediatrics, 1995).

For public health and safety officials, accidental injury prevention is a priority (NIH, 2004). Injuries related to skateboard, snowboard, and wakeboard use are frequent in emergency departments and include knee injury,

whip-lash, head injury, spinal cord injury, broken bones (Particularly wrists), skin abrasions, and more (Pediatrics, 1995). Much research exists regarding the use and effectiveness of safety equipment in regards to skateboarding, snowboarding, and wakeboarding (Pediatrics, 1995). However, until this point, no research existed evaluating personality characteristics of skateboarders, snowboarders, and wakeboarders. By understanding sensation-seeking as a personality construct, public health and safety officials will be better able to instate and provide effective injury prevention for these populations.

The implications of this study also provide meaningful insight to health professionals in a variety of settings. For primary care physicians that deal with injured skateboarders, wakeboarders, and snowboarders, understanding the sensation-seeking needs of their patients will better equip primary care physicians to prescribe effective treatments. For example, it is not uncommon for a primary care physician to see a patient come in initially with a minor injury only to see the same patient a few weeks later having exacerbated the same injury by continued skateboard, snowboard, or wakeboard use (Pediatrics, 1995). Understanding the sensation-seeking needs of their patients

will help frustrated physicians better treat their sensation-seeking patients.

Professionals from the field of physical rehabilitation will find the results of this study helpful in treating many populations. While this information will be directly informative to physical rehabilitation of athletes with sport related injury, understanding sensation-seeking as a personality construct will help in the treatment of general and elderly populations as well.

The psychological component involved in rehabilitation from physical trauma has gained importance as rehabilitation teams work together for their patients (Wittig and Schurr, 1994). Studies concerning the role of personality in rehabilitation show that personality plays a major role in injury rate and level of adherence to rehabilitation plans (Wittig and Schurr, 1994). Some research suggests that those sensation-seekers who are more experienced at their high-risk sport tend to have lower injury rates when compared to less experienced individuals of the same sport (Connolly, 1981). Zuckerman (1994) believes that this can be understood by the idea that risk is relative to skill. Athletes more practiced in their sport understand the limits of their risk and observe them (Zuckerman, 1994). On the other hand, some research

indicates that lower level and lower sensation-seeking sport participants tend to avoid an activity after injury, while higher sensation-seekers who are more practiced in their sport will "get right back on the horse that threw them" (Smith, Ptacek, and Smoll, 1992; Zuckerman, 1994).

Research directly studying injury and sensation-seeking has yielded mixed results. While two studies examining spinal cord injury and sensation-seeking personality traits have been conducted (Ditunno, McCauley, and Marcquette, 1985; Mawson et al., 1988) only one of these studies is considered methodologically sound enough to suggest a relationship between spinal cord injury and sensation-seeking personality (Zuckerman, 1994). The results from the Mawson et al. (1988) study indicate that sensation-seeking plays a significant role in a spinal cord injury patient's personality before their accident. Implications from this and other studies suggest first, that understanding sensation-seeking can help in the prevention of injuries. Finally, these studies suggest that professionals involved in rehabilitation for individuals who have been physically injured, will benefit from understanding the sensation-seeking needs of their patients.

Limitations

Although results from analysis of the data in this study support results from other studies concerning the relationship of sensation-seeking subscales and high-risk sport participation, limitations to this study exist and should be considered. Limitations to this research study include low reliability of the Boredom Susceptibility (BS) subscale of the SSS-V, controlling for age, and small sample size.

No significant difference was found between high and low-risk sport groups in this study on the Boredom Susceptibility (BS) subscale of the SSS-V. This subscale has an internal reliability of 0.56-0.65. The relatively low reliability of the Boredom Susceptibility (BS) subscale should be considered when evaluating this data.

A significant difference in age between high and low-risk sport groups was found during descriptive analysis of this data (see Table 3). Therefore any difference found between the high-risk group of skateboarders, snowboarders, wakeboarders, and low-risk group of golfers could have been accounted for by nothing more than age. The author acknowledges that using an ANCOVA to control for differences in age rather than building the control into

the study before data collection provides a limitation to the validity of this study.

The most pertinent limitation of this study involves the characteristics of the sample. First, the sample surveyed in this study was conveniently selected. Only those who volunteered to send back a completed survey were included. Therefore, differences were found between groups that took time to complete and return the survey. Only data from competitive males were included in the analysis. Thus, results from the analysis of this data hold true only for the competitive males that completed and returned a survey in this study.

The small sample sizes of skateboard (N=13), snowboard (N=7), and wakeboard (N=14) competitors provides a limitation in that the results found from this data can hardly be generalized to all populations of skateboard, snowboard, and wakeboard competitors. After no significant differences were found among skateboard, snowboard, and wakeboard competitors on means of the SSS-V (see Appendix), they were grouped together to provide one high-risk group (N=34) with golfers comprising the low-risk group (N=29). Although these sample sizes are comparative to sample sizes from other studies (see Table 1) (Cronin, 1991; Diehm and Armatas, 2003; Jack and Ronan, 1998), the sport groups

surveyed in this research study may not be generalized within and across broader high-risk sport populations.

Future Directions

Limitations aside, this study is the first to study the fasted growing recreational sport groups in the United States today (NSGA, 2003). Implications from the results of this study suggest that at least males who compete in the high-risk sports of skateboarding, wakeboarding, and snowboarding are driven by the personality construct of sensation-seeking. Likewise, analysis of the data from participants in this study reveal Experience Seeking (ES), Disinhibition (DIS), and Thrill and Adventure Seeking (TAS) to be the types of sensation-seeking that account for participation in skateboarding, snowboarding, and wakeboarding. With the understanding that participation in these sports as well as injuries related to these sports are expected to increase, understanding sensation-seeking as a personality construct is crucial for professionals who deal with the population of skateboarders, snowboarders, and wakeboarders.

In the area of high-risk sport involvement, future research concerning sensation-seeking and its relationship to competition, socioeconomic status, injury, and rehabilitation will be helpful. Likewise, future research

should assess injury rates, use of protective equipment, public park use, and use across various socioeconomic groups for the growing population of skateboard, snowboard, and wakeboard participants.

APPENDICES

APPENDIX A

Texas State University

Informed Consent Form

You are being invited to participate in a research study examining the personality characteristic of sensation-seeking and sport motivation among high-risk (skateboard, snowboard, and wakeboard) and low risk (golf and running) sport groups. We will be gathering information through a series of questionnaires that will evaluate a sport competitor's risk-taking, sport motivation, as well as some demographics. We believe that scores on these questionnaires will classify skateboarders, snowboarders, and wakeboarders into high-risk sport groups and golfers and runners into low-risk sport groups. This data will help us evaluate sensation-seeking and sport motivation in the "extreme" sport population.

Participation in this research study will take about 30 minutes of your time and is completely voluntary. There are many different reasons why people choose to participate in any sport, so please answer each question as it applies to you. There are no "right" or "wrong" responses. We would like to compare your responses on the surveys to the responses of others to see if associations exist among the groups listed above.

As results of this research study will be made available to you, participation in this study could lead to an increase in self-knowledge, and perhaps a greater societal understanding and acceptance of "extreme" activities. Likewise, you will better understand the research process and will also benefit us as we attempt to better understand personality and motivation especially as it relates to "extreme" sports and high and low-risk sport participation.

You will be asked to complete one brief Demographic Questionnaire, which will be followed by a 40-item survey about activity preferences. Another 28-item questionnaire

will ask you to rate the reasons you currently have for participating in your sport.

Some of this information is personal in nature, but please note that we are not asking for any identifying information (such as name or identification number) so there is no way anyone can associate your name with your responses.

Your participation in this research study will in no way prejudice your relationship with your pro shop, manager, or coach. Should you choose to participate, you may also choose to withdraw your participation at any time with no penalty to you.

If you have any questions about the study, contact the Principle Investigator, Dr. Randall E. Osborne, Dept. of Psychology, Texas State University-San Marcos, 512-245-8236 or by email at ro10@txstate.edu. If you have any questions about your rights as a participant in this or any other study, you can contact the Office of Sponsored Projects by calling 512-245-2314.

***Your completion and return of this survey indicates your consent for us to use this information for the purposes of this study. Please keep this form as an explanation of your participation in this study and the handling of the information you supply.**

APPENDIX B

Demographic Information

Age:

Sport (place an "x" in the box of any sport you **compete** in):

☐ Running	☐ Golf	☐ Skateboard	☐ Snowboard	☐ Wakeboard
List events:		Specify style (vert/street):	Specify Style:	

List any other sport you **compete** in:

How long have you been competing (in months or years)?

APPENDIX C

Sensation-seeking Scale V
(Zuckerman, 1994)

Directions: Each of the items below contains two choices A and B. Please mark which of the choices most describes your likes or the way you feel. In some cases you may find items in which both choices describe your likes or feelings. Please choose the one which better describes your likes or feelings. In some cases you may find items in which you do not like either choice. In these cases mark the choice you dislike the least. Do not leave any items blank. It is important you respond to all items with only one choice, A or B. We are interested only in your likes or feelings, not in how others feel about these things or how one is supposed to feel. There are no right or wrong answers as in other kinds of tests. Be frank and give your honest appraisal of yourself.

1)__**A** I like "wild" uninhibited parties.
__**B** I prefer quiet parties with good conversation.

2)__**A** There are some movies I enjoy seeing a second or even third time.
__**B** I can't stand watching a movie that I've seen before.

3)__**A** I often wish I could be a mountain climber.
__**B** I can't understand people who risk their necks climbing mountains.

4)__**A** I dislike all body odors.
__**B** I like some of the earthy body smells.

5)__**A** I get bored seeing the same old faces.
__**B** I like the comfortable familiarity of everyday friends.

6)__**A** I like to explore a strange city or section of town by myself, even if it means getting lost.
__**B** I prefer a guide when I am in a place I don't know well.

7)__**A** I dislike people who do or say things just to shock or upset others.
__**B** When you can predict almost everything a person will do and say he or she must be a bore.

8)__**A** I usually don't enjoy a movie or play where I can predict what will happen in advance.
__**B** I don't mind watching a movie or play where I can predict what will happen in advance.

9)__**A** I have tried marijuana or would like to.
__**B** I would never smoke marijuana.

10)__**A** I would not like to try any drug which might produce strange and dangerous effects on me.
__**B** I would like to try some of the drugs that produce hallucinations.

11)__**A** A sensible person avoids activities that are dangerous.
__**B** I sometimes like to do things that are a little frightening.

12)__**A** I dislike "swingers" (people who are uninhibited and free about sex).
__**B** I enjoy the company of real "swingers."

13)__**A** I find that stimulants make me uncomfortable.
__**B** I often like to get high (drinking liquor or smoking marijuana).

14)__**A** I like to try new foods that I have never tasted before.
__**B** I order the dishes with which I am familiar so as to avoid disappointment and unpleasantness.

15)__**A** I enjoy looking at home movies, videos, or travel slides.
__**B** Looking at someone's home movies, videos, or travel slides bores me tremendously.

16)__**A** I would like to take up the sport of water skiing.
__**B** I would not like to take up water skiing.

17)__**A** I would like to try surfboard riding.
__**B** I would not like to try surfboard riding.

18)__**A** I would like to take off on a trip with no preplanned or definite routes, or timetable.
__**B** When I go on a trip I like to plan my route and timetable fairly carefully.

19)__**A** I prefer the "down to earth" kinds of people as friends.
__**B** I would like to make friends in some of the "far-out" groups like artists or "punks."

20)__**A** I would not like to learn to fly an airplane.
__**B** I would like to learn to fly an airplane

21)__**A** I prefer the surface of the water to the depths.
__**B** I would like to go scuba diving.

22)__**A** I would like to meet some persons who are homosexual (men or women)
__**B** I stay away from anyone I suspect of being "gay" or "lesbian."

23)__**A** I would like to try parachute jumping.
__**B** I would never want to try jumping out of a plane, with or without a parachute.

24)__**A** I prefer friends who are excitingly unpredictable.
__**B** I prefer friends who are reliable and predictable.

25)__**A** I am not interested in experience for its own sake.
__**B** I like to have new and exciting experiences and sensations even if they are a little frightening, unconventional, or illegal.

26)__**A** The essence of good art is in its clarity, symmetry of form, and harmony of colors.
__**B** I often find beauty in the "clashing" colors and irregular forms of modern paintings.

27)__**A** I enjoy spending time in the familiar surroundings of home.
__**B** I get very restless if I have to stay around home for any length of time.

28)__**A** I like to dive off the high board.
__**B** I don't like the feeling I get standing on the high board (or I don't go near it at all).
29)__**A** I like to date persons who are physically exciting.
__**B** I like to date people who share my values.

30)__**A** Heavy drinking usually ruins a party because some people get loud and boisterous.
__**B** Keeping the drinks full is the key to a good party.

31)__**A** The worst social sin is to be rude.
__**B** The worst social sin is to be a bore.

32)__**A** A person should have considerable sexual experience before marriage.
__**B** It's better if two married persons begin their sexual experience with each other.

33)__**A** Even if I had the money, I would not care to associate with flighty rich persons in the "jet set."
__**B** I could conceive of myself seeking pleasures around the world with the "jet set."

34)__**A** I like people who are sharp and witty even if they do sometimes insult others.
__**B** I dislike people who have their fun at the expense of hurting the feelings of others.

35)__**A** There is altogether too much portrayal of sex in movies.
__**B** I enjoy watching many of the "sexy" scenes in movies.

36)__**A** I feel best after taking a couple of drinks.
__**B** Something is wrong with people who need liquor to feel good.

37)__**A** People should dress according to some standard of taste, neatness, and style.
__**B** People should dress in individual ways even if the effects are sometimes strange.

38)__**A** Sailing long distances in small sailing crafts is foolhardy.
__**B** I would like to sail a long distance in a small but seaworthy sailing craft.

39)__**A** I have no patience with dull or boring persons.
__**B** I find something interesting in almost every person I talk to.

40)__**A** Skiing down a high mountain slope is a good way to end up on crutches.
__**B** I think I would enjoy the sensations of skiing very fast down a high mountain slope.

END OF TEST

APPENDIX D

Sport Motivation Scale
(Pelletier et al., 1995)

Why do you practice your sport?

Using the scale below, please indicate to what extent each of the following items corresponds to one of the reasons for which you are presently practicing your sport.

	Does not correspond at all					Corresponds moderately	Corresponds exactly
1. For the pleasure I feel in living exciting experiences.	1	2	3	4	5	6	7
2. For the pleasure it gives me to know more about the sport that I practice.	1	2	3	4	5	6	7
3. I used to have good reasons for doing sports, but now I am asking myself if I should continue doing it.	1	2	3	4	5	6	7
4. For the pleasure of discovering new training techniques.	1	2	3	4	5	6	7
5. I don't know anymore; I have the impression that I am incapable of succeeding in this sport.	1	2	3	4	5	6	7
6. Because it allows me to be well regarded by people that I know.	1	2	3	4	5	6	7
7. Because, in my opinion, it is one of the best ways to meet people.	1	2	3	4	5	6	7
8. Because I feel a lot of personal satisfaction while mastering certain difficult training techniques.	1	2	3	4	5	6	7
9. Because it is absolutely necessary to do sports if one wants to be in shape.	1	2	3	4	5	6	7
10. For the prestige of being an athlete.	1	2	3	4	5	6	7
11. Because it is one of the best ways I have chosen to develop other aspects of myself.	1	2	3	4	5	6	7
12. For the pleasure I feel while improving some of my weak points.	1	2	3	4	5	6	7

13. For the excitement I feel when I am really involved in the activity.	1	2	3	4	5	6	7
14. Because I must do sports to feel good about myself.	1	2	3	4	5	6	7
15. For the satisfaction I experience while I am perfecting my abilities.	1	2	3	4	5	6	7
16. Because people around me think it is important to be in shape.	1	2	3	4	5	6	7
17. Because it is a good way to learn lots of things which could be useful to me in other areas of my life.	1	2	3	4	5	6	7
18. For the intense emotions that I feel while I am doing a sport that I like.	1	2	3	4	5	6	7
19. It is not clear to me anymore; I don't really think my place is in sport.	1	2	3	4	5	6	7
20. For the pleasure that I feel while executing certain difficult movements.	1	2	3	4	5	6	7
21. Because I would feel bad if I was not taking time to do it.	1	2	3	4	5	6	7
22. To show others how good I am at my sport.	1	2	3	4	5	6	7
23. For the pleasure that I feel while learning training techniques that I have never tried before.	1	2	3	4	5	6	7
24. Because it is one of the best ways to maintain good relationships with my friends.	1	2	3	4	5	6	7
25. Because I like the feeling of being totally immersed in the activity.	1	2	3	4	5	6	7
26. Because I must do sports regularly.	1	2	3	4	5	13.	7
27. For the pleasure of discovering new performance strategies.	1	2	3	4	5	6	7
28. I often ask myself; I can't seem to achieve the goals that I set for myself.	1	2	3	4	5	6	7

END OF TEST

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