MOTIVATIONS AND SENSATION SEEKING BEHIND RECREATIONAL STORM CHASERS IN THE UNITED STATES

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The undersigned, appointed by the Dean of the Graduate School, have examined the project entitled

MOTIVATIONS AND SENSATION SEEKING BEHIND
RECREATIONAL STORM CHASERS IN THE UNITED STATES

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A candidate for the degree of Master of Parks, Recreation and Tourism

And hereby certify that in their opinion it is worthy of acceptance.

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ABSTRACT

Several studies have examined risk recreation activities, such as mountain climbing, scuba diving, surfing and whitewater rafting. However, little is known about recreational storm chasing, a type of risk recreation activity which has increased in popularity since the 1990s. Therefore, a study was conducted to understand the characteristics of the activity and the recreational storm-chasers. Particularly, this study assessed the motivations and sensation seeking attributes of recreational storm chasers, as well as the relationship between both constructs. Results showed that recreational storm chasers were mostly motivated by Enjoying Nature and Learning, while least motivated by Sense of Achievement and Taking Risks. Regarding sensation seeking, results showed that respondents scored highest on Experience Seeking, and lowest on Boredom Susceptibility. Both Learning and Similar People motivational dimensions were significantly correlated with the Experience Seeking dimension. Results also showed significant correlations between the Taking Risks motivational dimension and the Thrill and Adventure Seeking dimension. Study results suggest that additional research is needed to further analyze the relationship between the motivation and sensation seeking constructs.

CHAPTER I:

INTRODUCTION

Risk recreational pursuits are sought out by millions of people throughout North America and the world (Ewert, 1985). Examples of activities include whitewater rafting, skydiving, mountaineering, scuba diving, and paragliding. Storm chasing is considered as one of the new forms of risk tourism and recreational activities, having increased in popularity since the release of the movie *Twister* in 1996 (Cantillon & Bristow, 2001). Although real life storm chasing is nothing like the movies, there is still a real rush that people are willing to see one of nature's most destructive forces (Bristow & Cantillon, 2000). Further, in 2007, the Discovery Channel launched a weekly documentary television series, *Storm Chasers*. The program follows a team of storm chasers as they attempt to intercept and film a tornado from inside of it. The program is experiencing a great success and is airing its third season with an increasing number of episodes (Discovery channel, n.d.). This chapter introduces several concepts related to storms and storm chasing, and describes the study purpose, need and limitations.

Storms and Storm Chasing

As a result of frequent passages of different air masses and unstable atmospheric conditions, the Midwest experiences a variety of severe storms in all seasons. Warmer

months, typically March through October, often produce thunderstorms and lightning, hail, flood producing rainstorms, tornadoes, and high winds (Doswell III, 1996). About one percent of severe thunderstorms spawn a tornado (Thoron, 2006; Changnon & Kunkel, 2006), a violently rotating column of air extending between a thunderstorm cloud and the ground (Thoron, 2006).

Tornadoes occur throughout the world and in different geographies, including mountains, plains and coastlines, in valleys, and over oceans. However, tornados occur most frequently in the "Tornado Alley", a hundred-mile-wide swath in the central United States which extends from the southern Texas Panhandle through Nebraska and northeastward into eastern North Dakota and Minnesota (Bluestein, 1999; Brooks, Doswell III & Kay, 2003). In this area, there are at least five tornadoes every year within a circle of radius of one degree of latitude-longitude (Bluestein, 1999). As a result, most of the storm chasing take place within this area during late spring and early summer, when tornados are most frequent and active (Bristow & Cantillon, 2000).

Storm chasing began after World War II driven by scientific reasons (Cantillon & Bristow, 2001). During this period, military-trained pilots who had a working knowledge of radar technology were given an opportunity to study storms first hand by flying through them (Bristow & Cantillon, 2000). The information gained from these flights became the basis for understanding tornado-producing storms. The post-WWII period brought many highway improvements, which helped bring the chase from the air to the ground (Bristow & Cantillon, 2000). During the seventies, atmospheric scientists began

to conduct storm chases in a more organized way (Doswell III, 2007). Specifically, the Tornado Intercept Project in 1972, a joint effort by National Severe Storms Laboratory and the University of Oklahoma was considered the beginning of scientific storm chasing (Doswell III, 2007).

Scientific storm chasers use a variety of equipment and technologies to chase storms, including high-tech instruments such as mobile Doppler radar units, remote Internet uplinks, and advanced global positioning systems (Robertson, 1999). A storm chasing vehicle is usually equipped with standard (AM/FM) and weather radios, cellular phones, police scanners, laptops, and portable weather instruments. These provide storm chasers with local or regional weather information from remote contacts and secure communication between chasers (Robertson, 1999). Many of the facilities used in scientific storm chasing were adapted in recreational storm chasing tours. As technologies advance, prices of these equipments have become affordable, encouraging more people to engage in this activity.

Recreational storm chasing sometimes holds negative societal perceptions as people associate storms with disaster, disruption of routine life, and life-threatening (Robertson, 1999). However, after the movie *Twister* increased storm chasing is awareness to the public and brought an increased interest for this activity (Cantillon & Bristow, 2001), the media has either romanticized or misrepresented the dangers of storm chasing (Robertson, 1999). For example, Robertson (1999) reported that in 1996 there was a watershed of tornado home-video collections featuring storm chaser footage,

television features, and feature-length films, storm chasing magazine and newspaper articles, and chaser-related books.

Storm chasing gradually became a popular recreational activity in North America and around the world, including Australia, New Zealand, and Germany, among others (Robertson, 1999). However, many people embarked in storm chasing expeditions, without having necessarily a proper knowledge or equipment. Subsequently, storm chasing tour agencies appeared to provide guidance and assistance to this emerging market (Cantillon & Bristow, 2001). Tour agencies services include experienced meteorologists and storm chasers as tour guides, high-tech equipment that are needed to tracks the latest severe weather development on the road, knowledge and safety trainings, technical support, professional advice, and transportation.

Need for the Study

Given the increasing popularity of recreational storm chasing, understanding the factors that influence participation is necessary. Previous studies have examined high risk outdoor recreation activities, including scuba diving, whitewater rafting, sky diving, mountain climbing (e.g., Meyer, Thapa & Pennington-Gray, 2002; Celsi, Rose & Leigh, 1993; Fluker & Turner, 2000; Cronin, 1991). Many of these studies have examined either motivations driving risk activities or personality traits (i.e., sensation seeking attributes) associated with their participants. However, research in recreational storm chasing is still lacking. Therefore, despite the preliminary understandings gained from previous research

in general risk recreation activity, literature urges for further exploration (Bristow & Cantilon, 2000; Cantilon & Bristow, 2001; Robertson, 1999).

Study Purposes and Objectives

The purpose of this study is to examine the factors associated with participation in recreational storm chasing in the United States. Following previous research on risk recreation activities, both motivations and sensation seeking attributes will be explored. Specifically, this study will address the following three objectives:

1. To examine the motivations of recreational storm chasers.
2. To assess the sensation seeking attributes of recreational storm chasers.
3. To analyze the relationships between motivations and sensation seeking attributes of recreational storm chasers.

This study will fill a gap in the risk-outdoor activities literature enhancing our understanding of recreational storm chasing. Research findings will also provide tour agencies with information that can improve their services and better design their promotion and management strategies to address participants' needs and motivations.

Definitions

Motivation: A state of need or a condition that drives an individual toward certain types of action that are seen as likely to bring satisfaction (Moutinho, 2000).

Recreational storm chasers: Participants (recreationists or tourists) chasing storms for recreation purposes in organized tours operated by agencies.

Sensation seeking: "A trait defined by the seeking of varied, novel, complex and intense sensations and experiences, and the willingness to take physical, social, legal and financial risks for the sake of such experience" (Zuckerman, 1994, p. 27).

Storm: A natural part of the environment, arising as a consequence of solar heating and the Earth's topography and rotation (Doswell III, 1996)

Tornado: A violently rotating column of air extending between a thunderstorm cloud and the ground (Thoron, 2006).

CHAPTER II:

LITERATURE REVIEW

Numerous studies have been conducted to examine the decision to participate in risk recreation (e.g., Celsi, Rose & Leigh, 1993; Cronin, 1991; Diehm & Armatas, 2004; Ewert, 1985; Fluker & Turner, 2000; Jack & Ronan, 1998; Meyer, Thapa & Pennington-Gray, 2002; Slanger & Rudestam, 1997). Motivations and personality traits are central constructs in understanding participation in risk recreation, such as recreational storm chasing. In this chapter, the most relevant theories pertaining to motivations and sensation seeking are reviewed as well as applications of these constructs to risk recreation.

Motivational Theories of Recreation Participation

Motivation refers to a state of need or a condition that drives an individual toward certain types of action that are seen as likely to bring satisfaction (Moutinho, 2000). In this sense, motivations cause or "activate" human behavior (Mook, 1996; Mannell & Kleiber, 1997). Maslow (1943) developed the need hierarchy theory classifying motivations based on five types of human needs: physiological, safety, love, esteem, and self-actualization. Maslow placed these five needs within a hierarchy, from physical needs being the lowest to self-actualization being highest and stated that the appearance

of one type of need depends on the satisfaction of the previous need category. Although Maslow's hierarchy of needs is often referred to by leisure theorists (Mannell & Kleiber, 1997), it has some limitations. Maslow himself noted that behavior is multi-motivated, and not all behaviors are determined by the basic needs. Therefore, efforts to explain and understand motivations continued to develop.

In 1959, White proposes that there are two types of motivations: intrinsic and extrinsic (Deci, 1975). Intrinsic motivations refer to engaging in an activity purely for the pleasure and satisfaction derived from doing the activity, even in the absence of material rewards or external constraints (Deci & Ryan, 1985). Deci (1975) posit that intrinsic motivation stems from the innate psychological needs of competence and self-determination while extrinsic motivation pertains to a wide variety of behaviors that are engaged towards an end and not for their own sake.

Intrinsic and extrinsic motivations have been examined in different recreational activities. For example, Bennett and Kramer (2000; 2001) found that a set of intrinsic (i.e., the feeling, the challenge, self satisfaction and fulfillment) and extrinsic motivations (i.e., sponsorship, travel and competition) drive participation in surfing. In addition, comparing surfers and golfers in Australia, Diehm and Armatas (2004) found that surfers scored significantly higher than golfers in intrinsic motivations.

However, like Maslow's hierarchy of needs, the intrinsic-extrinsic theory also has some limitations. First, recreationists usually engage in recreational activities based on a combination of both intrinsic and extrinsic rewards. Also, the definition of intrinsic and

extrinsic motivation is very subjective, and varies among different people (Deci, 1971; Iso-Ahola, 1980).

Subsequently, Iso-Ahola (1982) postulated that leisure is driven by two dimensions: 1) seeking psychological satisfactions and 2) escaping from routine environment. These two dimensions are not mutually exclusive, and it is often possible for an individual to be engaged in both motives simultaneously (Iso-Ahola 1983; 1990). Further, both dimensions have a personal (psychological) and interpersonal (social) component (Iso-Ahola 1990; Ross & Iso-Ahola, 1991). Personal satisfactions consist mainly of self-determination, sense of competence, challenge, learning, exploration and relaxation. Interpersonal satisfaction contains engaging in leisure activities for social contact and connectedness (Iso-Ahola, 1990). The four dimensions (personal seeking, interpersonal seeking, personal escaping, and interpersonal escaping) proved to operate as salient motives for leisure behavior (Snepenger, King, Marshall & Uysal, 2006).

Although Iso-Ahola (1980) established that leisure and recreation were driven by escapism and seeking motives, specific motivations were still unknown to researchers. As a result, many researchers observed and interviewed participants in their leisure activities to develop inventories measuring leisure motivations. The Recreation Experience Preference (REP) scales developed by Driver (1983) and his colleagues are among the best-known and tested inventories (Mannell & Kleiber, 1997). The REP scales, after some revision over the years, have been employed in numerous outdoor recreation settings (Beh & Bruyere, 2007). The instrument measures the extent to which specific

satisfactions are desired and expected from leisure activities/settings, and have proven to be a valid and reliable indicator of recreation motivations and benefits (e.g., Manfredo, Driver & Tarrant, 1996). The full REP scale includes 234 items in twenty-one domains, including Achievement, Stimulation, Learning, and Social Interaction. However, due to the comprehensive nature and length of the scale, most studies select and measure domains relevant to the study context. For example, Schuett (1993) chose 13 domains from the REP scales to study whitewater kayaking participants; Yuan and McEwen (1989) derived 31 items from the scales to study campers' preferences; and Virden and Knopf (1989) selected 37 specific scale items to study the relationships between activities, experiences and environmental settings.

Personality Traits and Sensation Seeking

Iso-Ahola (1980) used an iceberg diagram to illustrate that expressed leisure needs and motivations are only a small part of the whole determinants of leisure behavior. He also identified the important influence of biological dispositions and early socialization (i.e., personality). Sensation Seeking was proposed by Zuckerman (1971) to explain differences in people's willingness to participate in risky activities across a wide range of behaviors. It is "a trait defined by the seeking of varied, novel, complex and intense sensations and experiences, and the willingness to take physical, social, legal and financial risks for the sake of such experience" (Zuckerman, 1994, p. 27). A sensation

seeker is seen as a person who needs varied, novel, and complex sensations and experiences to maintain an optimal level of arousal (Zuckerman, 1971).

The Optimal Level of Stimulation, first formulated by Wundt in 1873, re-emerged during the 1950s and early 1960s to explain the curvilinear relationship between affective reactions and intensities of stimulation (Zuckerman, 1978). The Sensation Seeking Scale (SSS) was developed in an attempt to provide an operational measure of the Optimal Level of Stimulation construct (Zuckerman, 1978). Since sensation seeking was first proposed by Zuckerman in the early 1970's, it has been through several stages of development; specifically, five different forms of the scale. Among all these scale forms, SSS-V is the most common and widely used.

According to Zuckerman (1979), the SSS-V consists of four sub-scales: (1) Thrill and Adventure Seeking measuring the desire to engage in risky, impulsive, and adventurous activities offering the individual unique sensations; (2) Experience Seeking measuring the desire to seek new sensations through the mind and senses and having an unconventional lifestyle; (3) Boredom Susceptibility measuring aversion to routine, repetitive, and monotonous invariant situations; and (4) Disinhibition measuring the need to seek social stimulation through disinhibited behavior. In turn, each of the four sub-scales includes ten forced-choice items (Zuckerman, 1979). A high score in the subscales usually indicates a great need for stimulation or a high level of sensation seeking. A total score for sensation seeking is derived from the summation of four independent scales. Research indicates the SSS-V scale is a reliable and valid

measurement of sensation seeking for a variety of activities (Shoham, Rose & Kahle, 2000; Zuckerman, 1978; Zuckerman, Eysenck & Eysenck, 1978).

Although the SSS-V scale has been widely used, it has received a number of criticisms, mainly in four aspects as delineated by Arnett (1996) and Hoyle, Stephenson, Palmgreen, Lorch and Donohew (2002). First, responses to several items related to strenuous physical activities, such as skiing and mountain climbing, were likely affected by respondent age. Second, original words in some items were colloquial, dated and no longer appropriate, reflecting idioms of the late 1960's to early 1970's when the scale was developed (e.g., hippies, jet set, and queer). Third, the scale contained numerous items related to alcohol or drug use and sexual behavior, thus rendering the form tautological for many sensation-seeking studies for which the scale had been used. Fourth, since the scale has 40 items in total, it might be lengthy and too time consuming for respondents, thus may not be included in some study that has finance and space limits. Also, the forced-choice format is cumbersome, and may limit our understanding about the respondents.

Hoyle et al (2002) revised the SSS-V, and developed a new scale to measure sensation seeking: Brief Sensation Seeking Scale (BSSS). In the new scale, the alcohol, drug and sex related questions and outdated colloquial statements were deleted. The scale measures sensation seeking still using the four subscales, but is much shorter, with two items per sub scales. It also uses a five-point Likert format (from strongly agree through to strongly disagree) instead of the forced-choice format in the original scale (Hoyle et

al., 2002). The strength of the BSSS is its reflection of the full content domain of the original sensation seeking scale, thereby allowing researchers using the BSSS to derive predictions from findings based on SSS-V (Hoyle et al., 2002). Like the SSS-V, the BSSS has high internal consistency and reliability (Hoyle et al., 2002; Gosling, Rentfrow & Swann, 2003). Although many researchers find it practical to incorporate BSSS in their study, BSSS also has some limitations. Previous studies that supported the construct validity of BSSS all have students or adolescents as their sample subjects (Donohew et al., 2000; Stephenson et al, 1999; Palmgreen, Donohew, Lorch, Hoyle & Stephenson, 2001). Therefore, the validity of BSSS in those non-student samples is unknown. In addition, with only two items per category, it is too brief to fully distinguish sensation seeking levels among participants.

Beyond SSS-V and BSSS, other scales have also been developed to measure sensations seeking, including the Arnett Inventory of Sensation Seeking (Arnett, 1994), Impulsive Sensation Seeking Scale (Zuckerman, Kuhlman & Camac, 1988), and Need Inventory of Sensation Seeking (Roth, Hammelstein & Brähler, 2007). However, the SSS-V still remains the most widely used and is the basis of many of these subsequent scales.

Applications of Motivations and Sensation Seeking in Risk Recreation

The constructs of motivations and sensation seeking have both been used to examine participation in risk recreation. These studies provide insight into the factors that may be driving recreational storm chasing.

Motivations in Risk Recreation

Studies have found that several motivations are associated with participation in risk recreational activities. For example, examining motivations of scuba divers in north central Florida, Meyer, Thapa and Pennington-Gray (2002) found four motivations driving participation in this activity: to look at underwater animal and plant life; because it is stimulating and exciting; to explore things; and for the adventure of it. In addition, they found significant gender differences females being more intrinsically motivated while males were more extrinsically motivated.

Beyond the identification of motivations for participation in risk recreation, studies have also examined differences in motivations by previous experience. Fluker and Turner (2000) studied participants in a one-day rafting trips of a whitewater rafting company in Melbourne (Australia), finding that motivations vary greatly among people with or without previous experience. Participants without prior rafting experience focus more on the action of whitewater rafting by seeking a new experience and exploring adventure alternatives, and are willing to take risks to accomplish this. In contrast, participants with prior rafting experience tend to be more motivated by ancillary benefits of whitewater

rafting, such as being with friends in a natural environment (Fluker & Turner, 2000). Likewise, differences between experienced and novel participants are found in other risk recreation activity participants such as skydivers (Celsi, Rose & Leigh, 1993). First-time skydiving jumpers are driven by curiosity, thrill seeking, social compliance and a desire for adventure make their first jumps while experienced ones are seeking skill-status and social recognition within the skydiving community.

Sensation Seeking in Risk Recreation

Similar to motivations, sensation-seeking, as an important personality trait, has been shown to influence participation in risk recreation (Ewert, 1985). Several studies have found that sensation seeking differentiates high or low risk activity participants from the general population (Babbitt, Rowland & Franken, 1990; Diehm & Armatasm, 2004; Jack & Ronan, 1998; Slanger & Rudessta, 1997). For example, examining sensation seeking among female participants in aerobic exercises class, a low risk recreation activity, Babbitt et al (1990) found that they had a lower sensation seeking level than the Australian general population.

Studies also found that high risk activity participants have different sensation seeking levels compared to the general population. For example, Cronin (1991) found that mountain climbers of a university climbing club scored higher on each of the four subscales and the total sensation seeking scores than the general population or the control group. Similar results were found regarding hang gliding (Jack & Ronan, 1998; Wagner

& Houlihan, 1994), skiing, rock climbing, white water kayaking, and stunt flying (Slanger & Rudestam, 1997), sky diving, mountaineering, motor-car racing (Jack & Ronan, 1998), parasailing (Chirivella & Martinez, 1994) and downhill skiing (Calhoon, 1988).

However, depending on the nature of certain activities and other contextual conditions, risk recreation participants may not score higher in all subscales of sensation seeking, compared to the general population. For example, recreational surfers in Australia (Diehm & Armatas, 2004) scored lower on boredom susceptibility which is related to the nature of surfer itself. Surfers have to control boredom because of the variability of surf conditions, which may cause them to wait considerable lengths of time for appropriate conditions for surfing, such as good weather or waiting for good waves. Similarly, scuba divers in Pittsburg did not score different from the reference population on the total scores, but scored significantly lower on the Boredom Susceptibility and Disinhibition subscales, while scoring higher on the Thrill and Adventure Seeking and Experience Seeking subscales (Taylor, O'Toole, Auble, Ryan & Sherman, 2001).

Motivations and Sensation Seeking

In summary, both motivations and sensation seeking influence participation in risk recreation activities. Although Celsi, Rose and Leigh (1993) suggest a need to examine constructs such as motivations and risk taking as dynamic processes rather than as static or trait variables, few studies have examined the relationship between sensation seeking

and motivations. For example, Babbit et al. (1990) found that female participants in aerobics classes in Australia had low sensation seeking tendencies and were mostly motivated by extrinsic rewards. This study suggests a relationship between motivations and sensation seeking, yet further studies are needed to better understand this relationship, particularly in risk recreation activities. Hence, this study aims to examine the relationships between motivations and sensation seeking among recreational storm chasers.

CHAPTER III:

RESEARCH METHODS

This study examines the sensation seeking and motivations associated with recreational storm chasing. Specifically, this study focuses on investigating the relationships between motivations and sensation seeking of recreational storm-chasers. A self-administered questionnaire was developed based on Recreation Experience Preference scales (Manfredo, Driver & Tarrant, 1996), Sensation Seeking Scale-Form V (Zuckerman, 1979), and Brief Sensation Seeking Scale (Hoyle et al, 2002), and distributed to individuals participating in organized storm chasing tours as this chapter details.

Study Population and Sampling

The subjects of this study are recreational storm chasers participating in organized tours. To access storm chasers that joined organized tours for recreational purposes, storm chasing tour agencies were approached to help with the distribution and collection of questionnaires. An internet search in 2008 yielded 18 storm chasing tour agencies approached for assistance in this study. From those, four were no longer in business, three declined partnering in this study, and two were never reached, resulting in nine agencies that were willing to participate in our study. To encourage tour agencies to

participate our study, we promised to provide them a free copy of the study results including marketing information and customers' feedback. With the exception of one Canadian company, partnering tour operators are based in seven states throughout the United States (Illinois, California, Oklahoma, Maryland, Colorado, West Virginia and Montana).

Data Collection

Self administered questionnaires were distributed by partnering tour operators at the end of each of their storm chasing tours. As the peak storm chasing season is spring and early summer, survey packages were sent to the nine partnering tour operators by mail in early April 2009. Each package included questionnaires (number based on operators estimated total of customers), self-addressed postage prepaid envelopes, and detailed instructions. According to the survey protocol, tour operators distributed the questionnaires to their customers at the end of each tour. To encourage participation, respondents who provided their contact information were entered into a drawing for one of two gas cards. Participants were asked to place their own completed questionnaires in sealed individual envelopes to protect their privacy of responses. Tour operators then collected the completed surveys already sealed in the envelopes and put them in the mail. Each survey was number coded to match respondents with their tour operator and to protect respondents' confidentiality.

After sending out questionnaires, an email was sent to tour operators informing them about the packages and reinforcing survey instructions. One month later, another reminder email reinforcing instructions was sent to tour operator as they run several tours each season. At the end of the data collection, once the 2009 tornado season was over (August 17th), small gifts were sent to participating tour operators to express appreciation for their cooperation.

Response Rate

Although nine tour agencies agreed to participate in this study, four operators did not distribute questionnaires for various reasons such as a slow tornado season and low participation during a challenging economic year. For example, one operator did not run any storm chasing tours in the 2009 season. The remaining five partnering tour operators reported a total of 115 storm chasers during the 2009 season. The survey produced 51 completed questionnaires from which one duplicate questionnaire was removed yielding 50 valid questionnaires for a 43.5% response rate (50/115).

Survey Instrument

To address study objectives, the survey instrument gathered information on motivations, sensation seeking, storm chasing experience, and socio-demographic characteristics. The instrument also included a section on the importance and

performance of tour operations, although such data was not analyzed in this study as it was not part of this thesis' objectives. Appendix A includes a copy of the questionnaire.

Table 1. Motivation dimensions and corresponding items included in this study

Motivation Dimensions	Motivation Items
Achievement	1. To show others I can do it
	2. To be recognized for doing it
	3. To do something impressive
	4. To show myself I can do it
	5. To gain a sense of self-confidence
	6. To challenge myself
Enjoy Nature	1. To be close to nature
	2. To experience the power of nature
	3. To enjoy the sights of nature
Learning	1. To experience new and different things
	2. To develop my knowledge of tornados/storms
	3. To learn more about tornados/storms
Risk Taking	1. To be in dangerous situations
	2. To take risks
	3. To experience not knowing what will happen
Similar People	1. To be with members of my group
	2. To be with others who enjoy the same things I do
	3. To be with people who have similar interests
Stimulation	1. To experience a lot of action
	2. To feel exhilaration
	3. To have thrills and excitement

Information on the motivations driving storm chasing participation was gathered using 21 items from the Recreation Experience Preference scale (Driver, 1983; Manfredo et al, 1996) representing six motivational dimensions: Achievement (six items; e.g., "to do something impressive"), Stimulation (three items; e.g., "to have thrills and

excitement"), Risk Taking (three items; e.g., "to be in dangerous situations"), Similar People (three items; e.g., "to be with people who have similar interests"), Learning (three items; e.g., "to develop my knowledge of tornados/storms"), and Enjoy Nature (three items; "to be close to nature"). Respondents rated the importance of each item on a five-point Likert type scale where 1 equaled very unimportant and 5 equaled very important. Table 1 summarizes the motivation dimensions and corresponding items that are included in this study.

To gather information on sensation seeking attributes of participants, we adapted the SSS-V to our study by removing unrelated items, combining items that test the same category and updating the language, following some changes modeled for the BSSS. However, several SSS-V items removed by the BSSS were retained for this study. Table 2 summarizes the sensation seeking dimensions and corresponding items that are included in this study.

Table 2. Sensation seeking dimensions and items included in this study

Sensation Seeking	**Sensation Seeking Items**
Experience Seeking	1. I like to explore strange places
	2. I like to try new foods that I have never tasted before
	3. I may change my itinerary on impulse when I travel
	4. I prefer not to use a guide even in a place I don't know
Disinhibition	1. I like to have unconventional exciting experiences
	2. I like friends that are different than me
	3. Stimulants make me uncomfortable
	4. I prefer quiet parties with good conversation
Thrill and Adventure Seeking	1. Relaxation is my most important goal for recreation

	2. I prefer safe sports/activities (e.g., yoga) 3. I like to do frightening things 4. I like to try risky sports
Boredom Susceptibility	1. I get restless when I spend too much time at home 2. I prefer friends who are excitingly unpredictable 3. I like the comfortable familiarity of my usual 4. I don't mind watching a movie I have seen before

The new SSS-V modified scale used in this study included 16 statements and used a five-point Likert scale where 1 equaled strongly disagree and 5 equaled strongly agree, following the format of the BSSS. Each of four sensation seeking dimensions has four items. Examples for each of the four dimensions are: "I like to try risky sports/activities (e.g., bungee jumping)" for Thrill and Adventure Seeking; "I like to try new foods that I have never tasted before" for Experience Seeking; "I prefer friends who are excitingly unpredictable" for Boredom Susceptibility; "I prefer quiet parties with good conversation" for Disinhibition.

Respondents were also asked questions relating to their storm chasing experience. The questions included length of the tour they took, with whom they took the tour, types and number of the atmospheric phenomena they spotted, how they learn about the tour, time frame for deciding to take and sign up a storm chasing tour, whether they have previous storm chasing experience or not, their devotion to storm chasing, their willingness to invest more on storm chasing and overall satisfaction with their tour. Finally, socio-demographic information of recreational storm chasers was collected, including: age, gender, family status, age of children, education level, annual income,

employment status, race and ethnicity. A pre-test of the instrument was conducted among seven Parks, Recreation and Tourism undergraduate students to assess content validity, after which some questions were reworded to improve understandability. The survey instrument was approved by Campus Institutional Review Board on March 13, 2009 (see Appendix B).

Data analysis

Data gathered was coded and entered into a dataset. The study used the Statistical Packages for the Social Sciences (SPSS) 16.0 software to conduct descriptive and inferential statistics. Descriptive statistics were used to examine the motivations of recreational storm chasers. Specifically, means and standard deviations were used to describe each of the six motivation dimensions (Achievement, Stimulation, Risk Taking, Similar People, Learning, and Enjoy Nature). Also, composite means of each motivational dimension were calculated by averaging the items included in each dimension. Likewise, descriptive statistics were used to assess the sensation seeking attributes of recreational storm chasers; means and standard deviations were used to describe each of the four sensation seeking dimensions (Thrill and Adventure Seeking, Experience Seeking, Boredom Susceptibility, Disinhibition). Cronbach's alphas were computed to assess each factor's internal reliability. An alpha of at least 0.70 was used as criterion for acceptable internal reliability (Corina, 1993); however, since the exploratory

nature of this study, lower alpha were accepted. The 0.33 corrected item-total correlation was used to retain an item within a dimension (Ho, 2006).

Finally, a series of Pearson *r* correlations were conducted to analyze the relationships between motivations and sensation seeking attributes of recreational storm chasers. Pearson *r* was used, since both motivations and sensation seeking attributes in this study were measured with Likert scales, the distribution of scores was approximately normal and symmetrical, and it was assumed that the relationship was not curvilinear (Holcomb, 2009). Correlations were run in which means of each sensation seeking dimension was correlated with each of the six motivation dimensions. Table 3 describes the statistical analyzes conducted to address the study objectives.

Table 3. Study objectives, statistical analysis and variables

Objectives	Analysis	Variables
1. To examine the motivations of recreational storm chasers.	Descriptive	Six motivation factors (Sense of Achievement, Stimulation, Risk Taking, Similar People, Learning, Enjoy Nature)
2. To assess the sensation seeking attributes of recreational storm chasers.	Descriptive	Four Sensation seeking factors (Thrill and Adventure Seeking, Experience Seeking, Boredom Susceptibility, Disinhibition)
3. To analyze the relationships between motivations and sensation seeking attributes of recreational storm chasers.	Pearson *r* Correlation	v1: Thrill and Adventure --Six motivation factors v1: Experience --Six motivation factors v1: Boredom --Six motivation factors v1: Disinhibition --Six motivation factors

CHAPTER IV:

RESULTS

Results of statistical analyses are reported in this chapter. Demographic information of recreational storm chasers, their motivations and sensation seeking attributes were analyzed with descriptive statistics. Correlation analyses were used to examine the relationship between motivations and sensation seeking of recreational storm chasers.

Socio-economic Profile of Recreational Storm Chasers

The majority of recreational storm chasers that responded to the survey were male (62.0%), and White (95.8%) or non-Hispanic (92.5%), as shown in table 4. Recreational storm chasing in the tornado alley attracts mostly middle-aged tourists. On average, study participants were in their early 40's (M= 41.9, SD= 12.0) and the majority (68.8%) were over 35 years old. Recreational storm chasers taking organized tours were highly educated. The majority (60.5%) of respondents had at least a college degree, and over one-quarter (25.6%) had an advanced degree. Nearly a third (29.3%) of survey participants reported a gross annual household income of at least $75,000, which is relative high taking into consideration the large proportion of single respondents. The majority (61.0%) had at least $50,000 of annual household income. Most participants (71.7%) were full-time employees; about a fifth (15.2%) were retired.

Table 4. Socio-economic profile of responding recreational storm chasers

	n	%
Gender (n=50)		
Female	19	38.0%
Male	31	62.0%
Race (n=47)		
White	45	95.8%
Other	2	4.2%
Ethnicity (n=40)		
Hispanic or Latino	3	7.5%
Not Hispanic or Latino	37	92.5%
Age (n=38)		
21 - 25 years old	5	10.4%
26 - 35 years old	10	20.8%
36 - 45 years old	14	29.2%
46 - 55 years old	13	27.1%
56 years old or older	6	12.5%
Highest Level of Education (n=43)		
High school graduate or less	6	13.9%
Some college	11	25.6%
Two-year college degree	7	16.3%
Four-year college degree	8	18.6%
Advanced degree	11	25.6%
Annual Household Income before Taxes (n=41)		
Less than $25,000	5	12.2%
$25,000 - $49,999	11	26.8%
$50,000 - $74,999	13	31.7%
$75,000 - $99,999	7	17.1%
$100,000 - $149,999	5	12.2%
Employment Status (n=46)		
Full-time employee	33	71.7%
Part-time employee	3	6.5%
Retired	7	15.2%
Student	1	2.3%
Other	2	4.3%

Nearly two-thirds (63.3%) of respondents were single mostly without children (55.1%), as shown in table 5. About three-quarters (71.4%) of participants did not have children no matter if they were single or married.

Table 5. Family household composition of responding recreational storm chasers

(n=49)	**n**	**%**
Without Children		
Single	27	55.1%
Married/partnered	8	16.3%
Sub Total	35	71.4%
With Children Living at Home		
Single	1	2.1%
Married/partnered	5	10.2%
Sub Total	6	12.3%
With Children No Longer Living at Home		
Single	3	6.1%
Married/partnered	5	10.2%
Sub Total	8	16.3%

More than half (56.4%) of the tour participants came from North America (56.4%), either from the United States (43.5%) or Canada (13.0%) as shown in table 6. Interestingly though, results show that recreational storm chasing in the tornado alley is capturing tourists from more distant areas. About a third of respondents were from Europe (30.5%) including the United Kingdom, Netherlands, Belgium and France; the remaining respondents were from Australia (10.9%) and Venezuela (2.2%).

Table 6. Country of residence of recreational storm chasers

	n	%
United States	20	43.4%
United Kingdom	7	15.2%
Canada	6	13.0%
Australia	5	10.9%
Netherland	5	10.9%
Other[1]	3	6.6%
Total	46	100.0%

[1] Other includes one respondent from the following countries: Belgium, France, and Venezuela.

Tour Profile, Decision Making Process and Current Tour Experience

Recreational storm chasing tours examined in this study were lengthy, as the majority (72.0%) lasted two weeks and the remaining (28.0%) lasted one week (Table 7). Nearly half (48.9%) of respondents took the tour alone and about one-quarter (22.2%) were accompanied by friends. The remaining took their tours accompanied by their spouse (11.1%), their siblings (11.1%) or by other family members (13.3%).

Table 7. Length of the tour and party composition

	n	%
Length of the Tour (n=50)		
1 week	14	28.0%
2 weeks	36	72.0%
Party Composition (n=45)[1]		
Took the tour alone	22	48.9%
Accompanied by friends	10	22.2%
Accompanied by spouse/partner	5	11.1%
Accompanied by siblings	5	11.1%
Accompanied by other family members	6	13.3%

[1] Percentages sum to more than 100%, as respondents were able to select multiple categories.

Almost two-thirds (63.3%) of respondents learned about their storm chasing tour operator from an internet search followed by about a quarter (22.4%) that learned about their tour operators from friends or relatives (Table 8). The majority (76.7%) of respondents decided to take their tours at least one year in advance before the tour, and half (50.0%) signed up for the tours at that time.

Table 8. Ways customers learned about tour operators and decision making process

	n	%
Ways Customers Learned About the Tour Operator (n=49)[1]		
Friends/relatives	11	22.4%
Internet search	31	63.3%
Story/documentary	4	8.2%
Advertisement	3	6.1%
Other	1	2.0%
Time-frame for Deciding to Take Tour (n=47)		
The same day	1	2.1%
1 week in advance	0	0.0%
1 month in advance	1	2.1%
6 months in advance	9	19.1%
1 year or more	36	76.7%
Time-frame for Signing-up for the Tour (n=48)		
The same day	0	0.0%
1 week in advance	1	2.4%
1 month in advance	4	9.5%
6 months in advance	16	38.1%
1 year or more	21	50.0%

[1] Percentages sum to more than 100%, as respondents were able to select multiple categories.

Results show that tours were successful expeditions in terms of number and variety of atmospheric events tourists spotted on their trip. The vast majority of storm

chasers (95.8%) spotted at least one atmospheric event during the chasing (Table 9). The most frequent atmospheric events experienced by those respondents were hail (91.3%), closely followed by lightning (89.1%). About half of the respondents spotted a funnel cloud (50.0%) or microburst (47.8%), and over a third experienced at least one tornado (34.8%) during the trip.

Table 9. Atmospheric events spotted on the tour

	n	%
Spotting on the Tour (n=48)		
Did not spot anything	2	4.2%
Spotted at least one atmospheric event	46	95.8%
Events Spotted on the Tour (n=46)[1]		
Hail	42	91.3%
Lightning	41	89.1%
Funnel cloud	23	50.0%
Microburst	22	47.8%
Tornado	16	34.8%
Other	10	21.7%

[1] Percentages sum to more than 100%, as respondents were able to select multiple categories.

Previous, Current and Future Engagement in Recreational Storm Chasing

The majority of participants (53.2%) had a previous storm chasing experience (Table 10). Of the experienced chasers, nearly half (48.9%) had taken an organized tour before, and about one third (29.8%) had previously encountered a tornado. A large proportion of respondents had some current involvement in storm chasing as about half (49.0%) considered themselves knowledgeable on storm chasing and about a third

(28.0%) had their own equipment or were a member of a weather related organization (30.0%). Nearly a quarter (24.0%) were subscribed to at least one weather related magazine. Results indicate willingness to undertake storm chasing in the future as the majority (68.0%) of respondents reported they would be willing to spend more time and money in this activity.

Table 10. Previous, current and future engagement in recreational storm chasing

	n	%
Previous Experience in Storm Chasing (n=50)		
None	22	46.8%
At least one experience	28	53.2%
Types of Previous Experience (n=47)[1]		
Encountered a tornado before	14	29.8%
Chased tornado for fun	7	14.9%
Job/study is weather related	3	6.4%
Took an organized tour before	23	48.9%
Indicators of Current Involvement (n=50)[1]		
Have own equipment	14	28.0%
Member of a weather related organization	15	30.0%
Subscribe to at least one weather related magazine	12	24.0%
Consider self knowledgeable on storm chasing	24	49.0%
Willingness to Spend More Time or Money in the Future (n=50)		
Willing to spend more time and money	34	68.0%
Willing to spend more time	11	22.0%
Willing to spend more money	1	2.0%
Not willing to spend more time or money	4	8.0%

[1] Percentages sum to more than 100.0%, as respondents were able to select multiple categories.

Most storm chasing tour participants (80.0%) would recommend tornado chasing to others, take another tornado chasing tour with the same company (90.0%), and

recommend this tour to others (94.0%; Table 11). Less than one third of respondents would take another tornado chasing tour with another company (24.0%) or do tornado chasing on their own (28.6%).

Table 11. Future engagement in recreational storm chasing

Future Engagement (n=50)	Very Unlikely	Unlikely	Neutral	Likely	Very Likely	*M*[1]	SD
Would recommend tornado chasing to others	4.0%	6.0%	10.0%	26.0%	54.0%	4.20	0.97
Would take another tornado chasing tour with this company	4.0%	2.0%	4.0%	26.0%	64.0%	4.44	1.35
Would recommend this tour to others	4.0%	0.0%	2.0%	30.0%	64.0%	4.50	1.49
Would take another tornado chasing tour with another	38.0%	20.0%	18.0%	16.0%	8.0%	2.36	1.11
Would do tornado chasing on your own	38.8%	20.4%	12.2%	14.3%	14.3%	2.45	0.89

[1] Measured on a 5 point scale from (1) Very Unlikely to (5) Very Likely.

Motivations of Recreational Storm Chasers

Several motivations were important for participating in recreational storm chasing (Table 12). The most important motivations for undertaking storm chasing were: "To enjoy the sights of nature" (*M*= 4.46; SD= 0.99), "to experience the power of nature" (*M*= 4.44; SD= 0.93), "to learn more about tornados/storms" (*M*= 4.39; SD= 0.93), "to develop knowledge of tornados/storms" (*M*= 4.28; SD= 0.88), "to be close to nature" (*M*= 4.22; SD= 0.86), and "to be with people who have similar interests" (*M*= 4.20; SD= 0.68). In turn, the least important motivations were "To show others I can do it" (*M*= 2.37;

SD= 1.17) "to be recognized for doing it" (*M*= 2.50; SD= 1.01) and "to do something impressive" (*M*= 2.68; SD= 1.00).

Table 12. Motivations of responding storm chasers

Motivation Items (n=50)	Very Un-important	Un-important	Neutral	Important	Very Important	*M*[1]	SD
To enjoy the sights of nature	4.0%	4.0%	0.0%	26.0%	66.0%	4.46	0.99
To experience the power of nature	4.0%	0.0%	6.0%	28.0%	62.0%	4.44	0.93
To learn more about tornados/storms	2.0%	4.1%	6.1%	28.6%	59.2%	4.39	0.93
To develop my knowledge of tornados/storms	2.0%	4.0%	4.0%	44.0%	46.0%	4.28	0.88
To be close to nature	2.0%	2.0%	10.0%	44.0%	42.0%	4.22	0.86
To be with people who have similar interests	0.0%	2.0%	8.2%	57.1%	32.7%	4.20	0.68
To experience new and different things	2.1%	6.3%	10.4%	45.8%	35.4%	4.06	0.95
To have thrills and excitement	2.0%	10.2%	12.2%	40.8%	34.7%	3.96	1.04
To be with others who enjoy the same things I do	0.0%	8.0%	16.0%	54.0%	22.0%	3.90	0.84
To feel exhilaration	0.0%	14.0%	12.0%	38.0%	30.0%	3.89	1.03
To experience a lot of action	2.0%	6.0%	18.0%	62.0%	12.0%	3.76	0.82
To experience not knowing what will happen	2.0%	8.2%	28.6%	44.9%	16.3%	3.65	0.93
To be with members of my group	2.0%	14.0%	42.0%	26.0%	16.0%	3.40	0.99
To challenge myself	4.0%	20.0%	30.0%	34.0%	12.0%	3.30	1.06
To take risks	6.0%	20.0%	34.0%	36.0%	4.0%	3.12	0.98
To be in dangerous situations	6.0%	22.0%	42.0%	24.0%	6.0%	3.02	0.98
To gain a sense of self-confidence	8.3%	16.7%	52.1%	16.7%	6.3%	2.96	0.97
To show myself I can do it	12.0%	24.0%	38.0%	20.0%	6.0%	2.84	1.08
To do something impressive	10.0%	36.0%	34.0%	16.0%	4.0%	2.68	1.00
To be recognized for doing it	18.0%	32.0%	34.0%	14.0%	2.0%	2.50	1.02
To show others I can do it	30.6%	22.4%	30.6%	12.2%	4.1%	2.37	1.17

[1] Measured on a five-point scale ranging from (1) Very Unimportant to (5) Very Important.

Table 13. Motivation dimensions and statements examined in this study

Motivation Dimensions and Items	n	*M*[1]	SD
Enjoying Nature (α= 0.844)	**50**	**4.37**	**0.81**
To enjoy the sights of nature	50	4.46	0.99
To experience the power of nature	50	4.44	0.93
To be close to nature	50	4.22	0.86
Learning (α= 0.867)	**50**	**4.24**	**0.81**
To learn more about tornados/storms	49	4.39	0.93
To develop my knowledge of tornados/storms	50	4.28	0.88
To experience new & different things	48	4.06	0.95
Stimulation (α= 0.721)	**50**	**3.87**	**0.83**
To have thrills and excitement	49	3.96	1.04
To feel exhilaration	47	3.89	1.03
To experience a lot of action	50	3.76	0.82
Similar People (α= 0.734)	**50**	**3.83**	**0.68**
To be with people who have similar interests	49	4.20	0.68
To be with others who enjoy the same things I do	50	3.90	0.84
To be with members of my group	50	3.40	0.99
Risk Taking (α= 0.836)[2]	**50**	**3.26**	**0.91**
To take risks	50	3.12	0.98
To be in dangerous situations	50	3.02	0.98
Sense of Achievement (α= 0.813)	**50**	**2.78**	**0.75**
To challenge myself	50	3.30	1.06
To gain a sense of self-confidence	48	2.96	0.97
To show myself I can do it	50	2.84	1.08
To do something impressive	50	2.68	1.00
To be recognized for doing it	50	2.50	1.02
To show others I can do it	49	2.37	1.17

[1] Measured on a five-point scale ranging from (1) Very Unimportant to (5) Very Important.

[2] "To experience not knowing what will happen" was removed improve scales reliability (α= 0.542)

Each of the six motivational dimensions displayed high internal reliability (i.e., α= 0.721 - 0.867), although one item (i.e., "To experience not knowing what will happen"; α= 0.542) was removed from Risk Taking to improve scale reliability (Table 13). Composite means of each motivational dimension show that respondents perceived

Enjoying Nature (*M*= 4.37; α= 0.844) as the most important motivational factor to participate in recreational storm chasing, closely followed by Learning (*M*= 4.25; α= 0.867). Stimulation (*M*= 3.84; α= 0.721), Similar People (*M*= 3.83; α= 0.734), and Risk Taking (*M*= 3.25; α= 0.836) were also important motivations associated with storm chasing. Sense of Achievement (*M*= 2.77; α= 0.813) appeared as the least importance motivational factor for storm chasers.

Sensation Seeking of Recreational Storm Chasers

Overall, respondents tended to be neutral on sensation seeking attributes, with 12 of the 16 sensation seeking items ranked as either neutral or low (Table 14). Respondents scored lowest on “I don’t mind watching a movie I have seen before" (*M*= 2.12; SD= 0.92), followed by “I prefer quiet parties with good conversation” (*M*= 2.70; SD= 1.04), and “I prefer not to use a guide even in a place they don’t know” (*M*= 2.76; SD= 1.23). Respondents did show a preference to explore strange places (*M*= 4.32; SD= 0.77) and “I like to have unconventional exciting experiences” (*M*= 4.10; SD= 0.84). Likewise, respondents scored relatively high on “I like to try new foods that I have never tasted before” (*M*= 3.69; SD= 1.12) and “I like friends that are different than me” (*M*= 3.60; SD= 0.86).

Table 14. Sensation seeking attributes of responding storm chasers

Sensation Seeking Items (n=50)	Strongly Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Strongly Agree	*M*[1]	SD
I like to explore strange places	0.0%	4.0%	6.0%	44.0%	46.0%	4.32	0.77
I like to have unconventional exciting experiences	0.0%	4.0%	18.0%	42.0%	36.0%	4.10	0.84
I like to try new foods that I have never tasted before	4.1%	14.3%	14.3%	42.9%	24.5%	3.69	1.12
I like friends that are different than me	0.0%	12.0%	28.0%	48.0%	12.0%	3.60	0.86
I get restless when I spend too much time at home	8.0%	12.0%	28.0%	30.0%	22.0%	3.46	1.20
Relaxation is my most important goal for recreation	20.0%	18.0%	34.0%	22.0%	6.0%	3.24[2]	0.92
I may change my itinerary on impulse when I travel	2.0%	22.0%	32.0%	44.0%	4.0%	3.22	0.91
I prefer safe sports/activities (e.g., yoga)	16.0%	22.0%	34.0%	16.0%	12.0%	3.14[2]	1.23
I like to do frightening things	10.0%	22.0%	28.0%	24.0%	16.0%	3.14	1.23
Stimulants make me uncomfortable	6.0%	22.0%	52.0%	12.0%	8.0%	3.06[2]	0.96
I prefer friends who are excitingly unpredictable	10.0%	14.0%	48.0%	18.0%	10.0%	3.04	1.07
I like the comfortable familiarity of my usual environment	6.0%	22.0%	28.0%	38.0%	6.0%	2.94[2]	1.00
I like to try risky sports	24.0%	26.0%	16.0%	16.0%	18.0%	2.78	1.45
I prefer not to use a guide even in a place I don't know	12.0%	24.0%	42.0%	20.0%	2.0%	2.76	0.98
I prefer quiet parties with good conversation	4.0%	16.0%	40.0%	26.0%	14.0%	2.70[2]	1.04
I don't mind watching a movie I have seen before	0.0%	12.0%	12.0%	52.0%	24.0%	2.12[2]	1.19

[1] Measured on a 5 point scale from (1) Strongly Disagree to (5) Strongly Agree.

[2] Scale item means reverse coded. Percentages were not changed.

Cronbach's tests indicated acceptable levels of internal reliability for three out of four sensation seeking dimensions after the removal of several items: Experience Seeking, Thrill and Adventure Seeking, and Boredom Susceptibility (Table 15). The Disinhibition dimension was removed from further analysis because correction measures did not resulted in an acceptable alpha coefficient (α= 0.249), even after several items (i.e. "I like to have unconventional exciting experiences", "I like friends that are different than me", "I prefer quiet parties with good conversation") were removed (α= 0.452). The Thrill and Adventure Seeking dimension (α= 0.789) showed the highest internal reliability, after "Relaxation is my most important goal for recreation" was removed. After removing the "I don't mind watching a movie I have seen before" item, the Boredom Susceptibility reached an acceptable internal reliability (α= 0.680). Experience Seeking had the lowest alpha (α= 0.529) even after two items (i.e., "I like to try new foods that I have never tasted" and "I prefer not to use a guide even in a place I don't know") were removed to increase reliability. In sum, eight statements representing three of the four original dimensions were retained.

Of these three final dimensions, respondents had moderately high score for the "Experience Seeking" dimension (*M*= 3.77). However, storm chasers did not show signs of having high sensation-seeking traits on the "Thrill and Adventure Seeking" (*M*= 3.02) nor the "Boredom Susceptibility" dimensions (*M*= 3.15).

Table 15. Sensation seeking statement and dimensions examined in the study

Sensation Seeking Dimensions and Items (n=50)[1]	**n**	***M***[2]	**SD**
Experience Seeking (α= 0.529)[3]	**50**	**3.77**	**0.69**
I like to explore strange places	50	4.32	0.77
I may change my itinerary on impulse when I travel	50	3.22	0.91
Thrill and Adventure Seeking (α= 0.789)[4]	**50**	**3.02**	**1.10**
I prefer safe sports/activities (e.g., yoga)	50	3.14[6]	1.23
I like to do frightening things	50	3.14	1.23
I like to try risky sports	50	2.78	1.45
Boredom Susceptibility (α= 0.680)[5]	**50**	**3.15**	**0.85**
I get restless when I spend too much time at home	50	3.46	1.20
I prefer friends who are excitingly unpredictable	50	3.04	1.07
I like the comfortable familiarity of my usual environment	50	2.94[6]	1.00

[1] Disinhibition dimension was removed due to unacceptable scale reliability (α= 0.249) with four items, (i.e., "I like to have unconventional exciting experiences", "I like friends that are different than me", "Stimulants make me uncomfortable", and "I prefer quiet parties with good conversation").

[2] Measured on a 5 point scale from (1) Strongly Disagree to (5) Strongly Agree.

[3] "I like to try new foods that I have never tasted before" and "I prefer not to use a guide even in a place I don't know" were removed to improve scale reliability (α= 0.195)

[4] "Relaxation is my most important goal for recreation" was removed to improve scale reliability (α=0.628)

[5] "I don't mind watching a movie I have seen before" was removed to improve scale reliability (α= 0.616)

[6] Scale item means reverse coded. Percentages were not changed.

Associations between Motivations and Sensation Seeking of Storm Chasing

Pearson *r* correlations conducted between motivation and sensation seeking dimensions showed some statistically significant correlations (Table 16). Experience Seeking was positively associated with Similar People (*r*= 0.282; *p*= 0.047), and Learning (*r*= 0.332; *p*= 0.018). However, analysis shows that there was no significant correlation between Experience Seeking and the other motivational dimensions. Thrill

and Adventure Seeking was found to be positively correlated with the Risk Taking dimension of motivations (r= 0.491; $p < 0.001$). There were no significant correlation between Thrill and Adventure Seeking and the rest five dimensions of motivations. No significant correlation was found between Boredom Susceptibility and any of the six motivation dimensions examined in this study. The Disinhibition dimension of sensation seeking was not examined in correlations due to its low internal reliability.

Table 16. Correlations between sensation seeking and motivation dimensions

Sensation Seeking	Motivations	Pearson *r*	Sig. (2-tailed)
Experience Seeking	Sense of Achievement	.060	.679
	Risk Taking	-.014	.921
	Similar People	.282*	.047
	Enjoy Nature	.210	.144
	Learning	.332*	.018
	Stimulation	.100	.489
Thrill and Adventure Seeking	Sense of Achievement	.222	.122
	Risk Taking	.491***	.000
	Similar People	.076	.600
	Enjoy Nature	-.065	.656
	Learning	-.058	.687
	Stimulation	.218	.128
Boredom Susceptibility	Sense of Achievement	.208	.148
	Risk Taking	.241	.092
	Similar People	.200	.164
	Enjoy Nature	.175	.225
	Learning	.076	.601
	Stimulation	.204	.156

* $p < 0.05$ (2-tailed)

*** $p < 0.001$ (2-tailed)

CHAPTER V:

CONCLUSION

The purpose of this study is to examine the motivations and sensation seeking attributes of recreational storm chasers, and to analyze the relationships between motivations and sensation seeking attributes of recreational storm chasers. This chapter includes interpretation of results analyzed in the previous chapter, conclusions of this study, as well as and limitations and recommendations for future research.

Recreational Storm Chasing Participation

The majority of recreational storm chasers that responded to the survey were male, which coincides with previous risk recreation studies that also report more men engaged in risk recreation activities (e.g., Llewellyn & Sanchez, 2008; Diehm & Armatas, 2004). In addition, most of these respondents were single, and did not have children even if they were married. However, this is not consistent with the age distribution of respondents given that most were middle aged. The results suggest that family obligations to children may hinder engagement in recreational storm chasing tours.

Recreational storm chasers were well educated; more than half had at least a college degree and one quarter had an advanced degree. This may be associated with the relative high income of these storm chasers. The majority of participants had an annual

household income over $50,000, which is particularly high given that most of respondents were single and did not have children. Reduced family obligations coupled with high incomes suggest more free leisure time and more disposable income that can be invested in this type of niche tourism in which tour prices are high. Furthermore, the majority of survey participants were full-time employees, which may help explain why most respondents decided to take storm chasing tour or signed-up for the tour one year in advance.

Not surprisingly given the geographic proximity to the tornado alley, North America (particularly the United States) is a major market for recreational storm chasing, as more than half of the tour participants came from this region. Interestingly though, a relative large proportion of respondents were international tourists, mostly from Europe, Australia and South America, who came to the United States to chase storms. Therefore, study results suggest that storm chasing tour operators need to consider the international market when promoting or marketing their services. Almost two-thirds of respondents learned about their storm chasing tour operator from an internet search suggesting that it is imperative for these companies to have an appealing website with updated and complete information about their tours. Given that most respondents signed up for their tour at least one year in advance, it is necessary that websites include detailed information on the schedule and availability of their future tours on their websites. Also, as about one-quarter of participants learned about their tour operator from friends and relatives, it is imperative that tour operators have very high service standards to pursue

high levels of satisfaction and encourage positive word-of-mouth and referrals to other potential tourists.

Respondents were almost equally comprised of experienced and inexperienced storm chasers, suggesting that recreational storm chasing is not necessarily a one-time tourism experience. Results also show that recreational storm chasing does not require highly specialized skills as compared to other risk recreation activities such as diving (Meisel & Cottrell, 2003). These results may suggest positive augury to this type of niche tourism, especially taking into consideration that most recreational storm chasers were willing to spend more time or money in storm chasing in future. Contrary to recreational divers who were found to be most often accompanied by friends or families on their expeditions (Meisel & Cottrell, 2003), nearly half of the recreational storm chasers took the tour alone. However, these differences may also be associated with different demographics of study participants; divers in Meisel and Cottrell's study were much younger than recreational storm chasers in our study and over a quarter were boy scouts in a diving program. Also, storm chasing is more restricted on the geographic area that this activity could be undertaken (i.e., Tornado Alley), compared to diving which practice is more extensively practiced.

Motivations for Recreational Storm Chasing

Enjoying Nature, Learning, and Stimulation were found to be the top three motivational dimensions to engage in recreational storm chasing, while Sense of

Achievement and Taking Risks were least important for recreational storm chasers. A low score on Taking Risks was not a surprising finding, as previous studies also found that participants of risk recreation activities ranked low in motivations related to the risks and dangers of those activities (Meyer, Thapa & Pennington-Gray, 2002; Ewert, 1985). The result that recreational storm chasers were mostly motivated by Enjoying Nature and Learning was surprising given the common perception of recreational storm chasers, yet very important for promoting this activity in the future. As participants were mostly interested in experiencing and learning about storms and atmospheric events rather than seeking the rush of dangerous situations, this finding can be used to combat the stereotype and sometimes bad image of recreational storm chasing, and can be used as a social marketing tool to shift the general public's perception of this type of risk recreation activity.

It is worth mentioning that the high relevance of enjoying nature and learning as important motivations for participants in risk recreation activities is supported by previous research. For example, studies of both mountaineers (Ewert, 1985) and recreational scuba divers (Meyer, Thapa & Pennington-Gray, 2002; Meisel & Cottrell, 2003) found that participants were most motivated by enjoying nature and learning, and least motivated by risks associated with those activities. Therefore, this study confirms that participants in various risk recreation activities do not pursue risks as their ultimate goals, but primarily seek challenging experiences: "although adventure recreators seek out increasingly difficult and challenging opportunities, they paradoxically do not

necessarily seek higher levels of risk" (Ewert & Hollenhorst, 1994, p. 188). Furthermore, learning and gaining insight as integral parts of risk recreation and not as side effects also appeared to be present among tourists engaged in this kind of risk recreation (Weber, 2001).

Sensation Seeking Attributes of Recreational Storm Chasers

Study results show that responding storm chasers are overall neutral in various sensation seeking attributes, contradicting previous studies showing high scores in every sensation seeking dimension. For example, hang-glider pilots (Wagner & Houlihan, 1994), mountain climbers (Cronin, 1991), skiers, rock climbers, white water kayakers, and stunt flyers (Slanger & Rudestam, 1997) displayed high levels of sensation seeking across all dimensions. These results may suggest that recreational storm chasers are different from other risk recreation activity participants, especially because their personalities seem to be more drawn to new experiences rather than the risks involved which is aligned with the motivation results in that recreational storm chasers are most motivated by enjoyment of nature and learning.

Although other risk recreation studies find high sensation seeking across all dimensions, a relative higher score on Experience Seeking while lower scores in other sensation seeking dimensions found in this study has also been previously reported in the literature. For instance, Diehm and Armatas (2004) found that recreational surfers in Australia scored lower on Boredom Susceptibility because surfers may control boredom

with the variability of this activity and surfing conditions. Likewise, recreational scuba divers in Pittsburg scored significantly lower on the Boredom Susceptibility and Disinhibition subscales, while scoring higher on the Thrill and Adventure Seeking and Experience Seeking subscales (Taylor, O'Toole, Auble, Ryan & Sherman, 2001), and recreational mountain climbers scored relatively higher on both Thrill and Adventure Seeking and Experience Seeking subscales, though four subscales were high (Cronin, 1991). Therefore, results from this study may suggest that the nature of recreational storm chasing, with high levels of active participation during the tours, may reduce perceptions of certain sensation seeking attributes such as indicators of boredom. In addition, overall low sensation seeking scores may be associated with respondents participating in organized tours with experienced guides, indicating that the risk perceived or sought may be reduced compare to those that chase storms on their own. Likewise, tour operators offered various activities and programs during the "Non-Action" time, thus recreational storm chasers did not score high in Boredom Susceptibility.

Finally, some demographics of study participants may also be helpful to interpret their low sensation seeking scores. Firstly, respondents were older than most participants in other risk recreation activities, were full-time employed, and had a high level of education. All these may restrict people's personality thus influence the level of sensation seeking attributes. For instance, high incomes and education levels may inhibit certain sensation seeking indicators as participants have resources to be constantly involved in different activities, hence reducing their high desire for seeking high levels of sensation.

Second, respondents had different cultural backgrounds which are not consistent with previous risk recreation studies in which participants were circumscribed to a specific location or country. People from different countries may have different socio-demographic characteristics that might influence their perceptions and levels of sensation seeking.

Correlation between Motivations and Sensation Seeking Attributes

Overall, few correlations were found between storm chasing motivations and sensation seeking dimensions indicating that both are distinct and independent constructs, measuring two different factors influencing participation in recreational storm chasing. For example, no significant correlation was found between Boredom Susceptibility and the six motivational dimensions, which it is not surprising since Boredom Susceptibility tests people's aversion to routine and repetitive situation, which does not have much to do with any of the six motivations.

However, it is important to mention that a significant positive correlation was found between Experience Seeking and two motivational dimensions: Similar People and Learning. This suggests that storm-chasers may consider learning from the activity involvement and being with similar people of same interests as components of the overall storm chasing experience. Therefore, the higher they score on Experience Seeking, the more motivated they are by Similar People and Learning, and vice versa. The positive correlation found between Thrill and Adventure Seeking and Risk Taking is not

surprising, because both constructs, per se, are similar. Thrill and Adventure Seeking is defined as measuring the desire to engage in risky, impulsive, and adventurous activities offering the individual unique sensations (Zuckerman, 1979) which is directly linked to taking risks. Therefore, those with personality traits drawn to Thrill and Adventure Seeking are also motivated by Risk Taking.

Study Limitations

This study has two main limitations. First, drawing a random sample of recreational storm chasers is not feasible, given the relatively small number of participants who are dispersed throughout the United States and even the world. Second, although recreational storm chasing is a small niche market and therefore a small sample size is justified and acceptable, it is still a limitation of this study. A very slow season because of few severe weather conditions in 2009 may have reduced the number of recreational storm chasers as this activity heavily depends on weather conditions. As a result, some storm chasing operators were forced to cancel some or all their tours, significantly reducing the pool of potential study participants. In addition, the 2009 economic crisis in the United States may have also reduced the number or recreational storm chasers given that this activity is a relative expensive recreational activity. Having relatively fewer storms in 2009, together with a down economy situation, may have resulted in a small sample size. The small number of respondents in this study also limited the capacity to conduct some statistical analysis (e.g., regression, analysis of

variance, *t*-tests) to examine relationships between motivations and sensation seeking constructs or identify differences across types of recreational storm chasers (e.g., experienced and inexperienced chasers). Given these limitations, any generalizations or interpretations of the results beyond the scope of this study should be done with caution.

Recommendations for Future Research

Study results suggest that the sensation seeking construct is yet to be further tested. Specifically, results showed that the Dishinbition dimension was not applicable in our study as it showed non acceptable internal reliability. Furthermore, previous studies have also shown lower Dishinbition scores in certain risk recreation activities such as scuba diving concluding that those items related to sex, drugs, and alcohol were tautological to such activities (Taylor, O'Toole, Auble, Ryan & Sherman, 2001). However, since this study did not include sex, drugs and alcohol related statements, results suggest that the whole disinhibition dimension should be further investigated to examine its applicability in risk recreation. Specifically, future research should examine the extent to which this dimension is a valid descriptor of a personality trait (i.e., high sensation seeking) or an attribute associated with certain types of recreational activities (e.g., swinger; sex tourism). Indeed, the Disinhibition dimension has been the focus of some criticisms (Arnet, 1996; Hoyle, Stephenson, Palmgreen, Lorch & Donohew, 2002).

Given that some correlations were found between motivations and sensation seeking attributes, further research is also needed to take a closer examination of the

nature of these relationships (e.g., to examine causality). On these regards, it would be important to replicate this study in other types of risk recreation activities. It would also be interesting to analyze the relationship of demographics characteristics with motivation dimensions as well as sensation seeking attributes, as previous studies have found motivational differences between genders and sensation seeking differences associated with participants' age (Meyer, Thapa & Pennington-Gray, 2002). Specifically, it is suggested that future research examine whether motivations or sensation seeking could predict participation behaviors on a given risk recreation activity (e.g., frequency of participation; willingness of future participation). Likewise, future study could also examine whether behavior and personal attributes (e.g., skilled versus non-skilled participants) influence storm chasing motivations as previous studies in other types of risk recreation have suggested (Celsi, Rose & Leigh, 1993; Fluker & Turner, 2000). Also, future studies could examine whether differences exist between recreational storm chasers and the general population or control groups regarding their sensation seeking levels as conducted in other risk recreation activities (Calhoon, 1988; Chirivella & Martinez, 1994; Cronin, 1991; Jack & Ronan, 1998; Slanger & Rudestam, 1997; Wagner & Houlihan, 1994).

Conclusion

Overall, recreational storm chasers in this study were highly motivated but had low to moderate sensation seeking levels. Enjoying Nature and Learning were the most

important motivations for recreational storm chasing, while Risk Taking was the least important. Respondents scored highest on the Experience Seeking dimension of sensation seeking. Some correlations were found between motivations and sensation seeking suggesting that there is certain relationship between the two constructs, but also possibility for further analysis in the future. However, given that many of the dimensions were not correlated, study findings also indicate that motivations and sensation seeking are different constructs that may independently influence participation in risk recreation activities. Future research is needed to further analyze and examine both constructs and their relationship in other types of risk recreation activities.

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APPENDIX A

THE RECREATIONAL STORM CHASER SURVEY

The Recreational Storm Chaser Study

Dear tornado/storm chaser,

Thank you for completing this survey. The University of Missouri's Department of Parks, Recreation and Tourism is conducting this survey to better understand the characteristics and motivations of tornado/storm chasers. This survey will also provide tour operators with information to make their tours even better.

This survey will take you less than 10 minutes to complete. We hope that you will decide to complete this survey, but you are under no obligation to respond to all, or any particular question. After completing the survey, please place it inside the provided envelope, seal the envelope, and return it to the tour operator. The University of Missouri has strict protocols to protect the confidentiality and privacy of participants in our research studies.

To thank you for your participation, you will be entered into a drawing for the chance to win two (2) $50.00 gas cards if you choose to give us your contact information. We will not distribute your contact information to any individual, organization or company and will destroy these records after the drawing.

Again, thank you for your willingness to take this survey. We really appreciate your time and participation. If you have any questions, please contact us.

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SCHOOL OF NATURAL RESOURCES
Parks, Recreation & Tourism

Thank you for taking the time to complete this survey on your tornado/storm chasing experience.

1. How long is this storm chasing tour?	❒ 1 day	❒ 2-3 days	❒ 1 week	❒ 2 weeks	❒ 2+weeks
2. With whom are you taking this tour? *Check all that apply.*					
❒ I came alone	❒ Friends		❒ My spouse/partner		
❒ My child(ren)	❒ Brothers/sisters		❒ Other family members	❒ Other	
3. Please indicate the number of times that you spotted the following events on this tour: *Write in the number for each event.*					
(___) Tornado	(___) Lightning event		(___) Microburst		
(___) Hail	(___) Funnel cloud		(___) Other (*specify*): _____		
❒ I didn't see anything (*storm chase bust*)					
4. How did you find out about this tour operator?					
❒ Friends/relatives	❒ Internet search	❒ Story/Documentary	❒ Advertisement	❒ Other (*specify*): _____	
5. How far in advance did you…					
Decide to go tornado/storm chasing?	❒ The same day	❒ 1 week	❒ 1 month	❒ 6 months	❒ 1 year or more
Sign up for this tour?	❒ The same day	❒ 1 week	❒ 1 month	❒ 6 months	❒ 1 year or more
6. Prior to this tour, indicate your experience with tornado/storm chasing. *Check all that apply.*					
❒ I have seen a tornado in person	❒ I have chased tornados on my own for fun				
❒ My job/study is weather related	❒ I have been on an organized tour in the past		❒ None		
7. Please indicate whether you…					
Own equipment for storm/tornado chasing?	❒ Yes	❒ No			
Are a member of a weather related organization?	❒ Yes	❒ No			
Subscribe to a weather related magazines?	❒ Yes	❒ No			
Consider yourself knowledgeable on tornado/storm chasing?	❒ Yes	❒ No			
8. Are you willing to spend more time or money on tornado/storm chasing in the future?					
❒ Yes, more time and money	❒ Yes, more time	❒ Yes, more money	❒ No		
9. Please indicate your overall level of satisfaction with this tornado/storm chasing experience.					
❒ Very dissatisfied	❒ Dissatisfied	❒ Neither	❒ Satisfied	❒ Very satisfied	

10. How likely are you to do the following?

	Very Unlikely	Unlikely	Neither	Likely	Very Likely
Take another tornado/storm chasing tour with this company	❒	❒	❒	❒	❒
Take another tornado/storm chasing tour with another company	❒	❒	❒	❒	❒
Do tornado/storm chasing on your own	❒	❒	❒	❒	❒
Recommend tornado/storm chasing to others	❒	❒	❒	❒	❒
Recommend this tour to others	❒	❒	❒	❒	❒

11. How much do you agree or disagree with the following statements?

Statements	Strongly Disagree	Somewhat Disagree	Neither	Somewhat Agree	Strongly Agree
I like to try risky sports/activities (e.g., bungee jumping)	❒	❒	❒	❒	❒
I prefer friends who are excitingly unpredictable	❒	❒	❒	❒	❒
I like friends that are different than me	❒	❒	❒	❒	❒
I like to try new foods that I have never tasted before	❒	❒	❒	❒	❒
I prefer quiet parties with good conversation	❒	❒	❒	❒	❒
I like to explore strange places	❒	❒	❒	❒	❒
I don't mind watching a movie I have seen before	❒	❒	❒	❒	❒
Relaxation is my most important goal for recreation	❒	❒	❒	❒	❒
I get restless when I spend too much time at home	❒	❒	❒	❒	❒
Stimulants make me uncomfortable	❒	❒	❒	❒	❒
I may change my itinerary on impulse when I travel	❒	❒	❒	❒	❒
I prefer safe sports/activities (e.g., yoga)	❒	❒	❒	❒	❒
I like to have unconventional exciting experiences	❒	❒	❒	❒	❒
I prefer not to use a guide even in a place I don't know	❒	❒	❒	❒	❒
I like the comfortable familiarity of my usual environment	❒	❒	❒	❒	❒
I like to do frightening things	❒	❒	❒	❒	❒

12. How important are the following reasons for going tornado/storm chasing?

Reasons	Very Unimportant	Unimportant	Neither	Important	Very Important
To challenge myself	❒	❒	❒	❒	❒
To have thrills and excitement	❒	❒	❒	❒	❒
To be in dangerous situations	❒	❒	❒	❒	❒
To be with members of my group	❒	❒	❒	❒	❒
To feel exhilaration	❒	❒	❒	❒	❒
To be recognized for doing it	❒	❒	❒	❒	❒
To be with people who have similar interests	❒	❒	❒	❒	❒
To enjoy the sights of nature	❒	❒	❒	❒	❒
To gain a sense of self-confidence	❒	❒	❒	❒	❒
To show myself I can do it	❒	❒	❒	❒	❒
To experience not knowing what will happen	❒	❒	❒	❒	❒
To be close to nature	❒	❒	❒	❒	❒
To experience a lot of action	❒	❒	❒	❒	❒
To take risks	❒	❒	❒	❒	❒
To develop my knowledge of tornados/storms	❒	❒	❒	❒	❒
To experience new and different things	❒	❒	❒	❒	❒
To show others I can do it	❒	❒	❒	❒	❒
To be with others who enjoy the same things I do	❒	❒	❒	❒	❒
To do something impressive	❒	❒	❒	❒	❒
To learn more about tornados/storms	❒	❒	❒	❒	❒
To experience the power of nature	❒	❒	❒	❒	❒

13. In your opinion, how important are the following tour attributes? And, how satisfied are you with them?

Attributes	Importance to You					Your Satisfaction				
	Very Unimportant	Somewhat Unimportant	Neither	Somewhat Important	Very Important	Very Unsatisfied	Unsatisfied	Neither	Satisfied	Very Satisfied
Friendly attitude of guides/staff	❒	❒	❒	❒	❒	❒	❒	❒	❒	❒
Experience of guides	❒	❒	❒	❒	❒	❒	❒	❒	❒	❒
Knowledge of guides	❒	❒	❒	❒	❒	❒	❒	❒	❒	❒
Driving skills of guides/staff	❒	❒	❒	❒	❒	❒	❒	❒	❒	❒
Responsiveness of tour operator	❒	❒	❒	❒	❒	❒	❒	❒	❒	❒
Ease of booking/registration	❒	❒	❒	❒	❒	❒	❒	❒	❒	❒
Ease to contact/reach the tour operator	❒	❒	❒	❒	❒	❒	❒	❒	❒	❒
Price of tour	❒	❒	❒	❒	❒	❒	❒	❒	❒	❒
Length of tour	❒	❒	❒	❒	❒	❒	❒	❒	❒	❒
Number of people per group	❒	❒	❒	❒	❒	❒	❒	❒	❒	❒
Tour design and itinerary	❒	❒	❒	❒	❒	❒	❒	❒	❒	❒
Program activities during "non-action" time	❒	❒	❒	❒	❒	❒	❒	❒	❒	❒
Lodging and accommodations	❒	❒	❒	❒	❒	❒	❒	❒	❒	❒
Provision of meals	❒	❒	❒	❒	❒	❒	❒	❒	❒	❒
Provision of snacks and drinks	❒	❒	❒	❒	❒	❒	❒	❒	❒	❒
Souvenir and memorabilia offerings	❒	❒	❒	❒	❒	❒	❒	❒	❒	❒
Weather forecasting equipment	❒	❒	❒	❒	❒	❒	❒	❒	❒	❒
Vehicle comfort and reliability	❒	❒	❒	❒	❒	❒	❒	❒	❒	❒
Learning during the trip	❒	❒	❒	❒	❒	❒	❒	❒	❒	❒
Website information	❒	❒	❒	❒	❒	❒	❒	❒	❒	❒
User friendly website	❒	❒	❒	❒	❒	❒	❒	❒	❒	❒
Safety instructions during the chase	❒	❒	❒	❒	❒	❒	❒	❒	❒	❒

Please, provide the following information about you and your family.

14. Your age: _____

15. Your gender: ❒ Female ❒ Male

16. Your family status:
- ❒ Single without children
- ❒ Single with children living at home
- ❒ Single with children no longer living at home
- ❒ Married/partnered without children
- ❒ Married/partnered with children living at home
- ❒ Married/partnered with children no longer living at home

17. The age of your children: *Check all that apply.*
- ❒ 6 or younger
- ❒ 7-12
- ❒ 13-17
- ❒ 18+
- ❒ Not applicable

18. Your highest level of education:
- ❒ High school graduate or less
- ❒ Some college
- ❒ Two-year college degree
- ❒ Four-year college degree
- ❒ Advanced degree

19. Your annual household income before taxes:
- ❒ Less than $25,000
- ❒ $25,000-$49,999
- ❒ $50,000-$74,999
- ❒ $75,000-$99,999
- ❒ $100,000-$149,999
- ❒ $150,000-$199,999
- ❒ $200,000 or more

20. Your employment status:
- ❒ Full time employee
- ❒ Part time employee
- ❒ Retired
- ❒ Student
- ❒ Unemployed
- ❒ Other

21. Your race:
- ❒ White
- ❒ Black or African American
- ❒ Asian
- ❒ Other

22. Your ethnicity:
- ❒ Hispanic or Latino
- ❒ Not Hispanic or Latino

23. Your zip code: _____

24. Do you have any additional comments or suggestions regarding this tour or the operator?

Thank You!

If you want to be entered into the drawing for the chance to win two (2) $50.00 gas cards, please enter your contact information.

Name: _____
E-mail address: _____
Phone number: _____

Your contact information will only be used for your entry into the drawing and to contact the prize winner. We will not distribute your contact information to any individual, organization or company.

Recreational Storm Chaser Study

School of Natural Resources
Parks, Recreation & Tourism

(3)

APPENDIX B

INSTITUTIONAL REVIEW BOARD APPROVAL

UNIVERSITY OF MISSOURI

Campus IRB Exempt Approval Letter: IRB # 1134537

Comment Number: 220142 (03-13-2009)
Exempt Approval Letter sent on Mar 13, 2009:
Subject: Campus IRB Exempt Approval Letter: IRB # 1134537

Dear Investigator:

Your human subject research project entitled Recreational Storm-Chasers: Motivations, Sensation-Seeking and Participant Characteristics of a Risk Recreation Activity. was reviewed and APPROVED as "Exempt" on March 13, 2009 and will expire on March 13, 2010. Research activities approved at this level are eligible for exemption from some federal IRB requirements. Although you will not be required to submit the annual Continuing Review Report, your approval will be contingent upon your agreement to annually submit the "Annual Exempt Research Certification" form to maintain current IRB approval. You must submit the "Annual Exempt Research Certification" form by January 27, 2010 to provide enough time for review and avoid delays in the IRB process. Failure to timely submit the certification form by the deadline will result in automatic expiration of IRB approval. (See form:http://irb.missouri.edu/eirb/)

If you wish to revise your activities, you do not need to submit an Amendment Application. You must contact the Campus IRB office for a determination of whether the proposed changes will continue to qualify for exempt status. You will be expected to provide a brief written description of the proposed revisions and how it will impact the risks to subject participants. The Campus IRB will provide a written determination of whether the proposed revisions change from exemption to expedite or full board review status. If the activities no longer qualify for exemption, as a result of the proposed revisions, an expedited or full board IRB application must be submitted to the Campus IRB. The investigator may not proceed with the proposed revisions until IRB approval is granted.

Please be aware that all human subject research activities must receive prior approval by the IRB prior to initiation, regardless of the review level status. If you have any questions regarding the IRB process, do not hesitate to contact the Campus IRB office at (573) 882-9585.

Campus Institutional Review Board