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RISK-TAKING BEHAVIOR OF SKATEBOARDERS AND TRADITIONAL SPORT PARTICIPANTS IN STUDENTS AGES 13-16 YEARS

by

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ABSTRACT

Risk-Taking Behavior of Skateboarders and Traditional Sport Participants in Students Ages 13-16 Years

by

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The researcher examined sensation-seeking behaviors of middle school and high school physical education students. The purpose of this study was to find the difference in sensation seeking behaviors between traditional sport participants, skateboarders, non-sport participants and among traditional sport participants and skateboarders. Traditional sports participants for this study consist of students who have played team baseball, basketball, football, soccer, volleyball, track & field, swimming, or softball. Skateboarder for this study consists of students who ride at least three times a week and favor this activity over others. Non-sports participants consist of students who do not play any type of traditional sport or skateboard. Both traditional sport participants and skateboarders are those who engage in both activities on a regular basis. A modified Sensation Seeking Scale (SSS) was used to survey 209 middle school and high school physical education students. The Sensation Seeking Scale used two subscales adventure and thrill seeking and risk-taking, to measure and analyze the questions asked on the survey. The data was analyzed using Statistical Package for the Social Sciences (SPSS)

version 10.0 and the statistical methods consisted of ANOVA, discriminant function analysis, and factor analysis. The primary research question guiding the study was whether skateboarders and traditional middle school sport participants have different sensation seeking behaviors related to the activity they are involved in. It was found that skateboarders and skateboarders and sports players have different sensation seeking attributes then non-sport participants. Within this study it was also found that males scored higher on the Thrill and Adventure seeking subscale.

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CHAPTER 1

INTRODUCTION

The recreational activity known as skateboarding is becoming increasingly more popular in today's society (Satatitude, 2001). Children as young as five years of age are learning how to skateboard instead of learning how to play traditional sports such as baseball and basketball. The activity known as skateboarding that some parents previously despised has become a sport in which their children can participate in local competitions. One area not yet explored in skateboarding is whether skateboarders are more likely to participate in other dangerous sensation seeking behaviors. Another question that arises from this activity or sport is why are more children engaging in skateboarding than traditional sports? The intent of this study was to determine if teenage skateboarders participate in high risk-taking activities and what are the different attitudes and perceptions of sensation seeking in middle school and high school students involved in traditional sports and skateboarding.

Statement of the Problem

The researcher investigated sensation seeking behaviors of teenage skateboarders and sport participants. The study focused on comparing sensation seeking behaviors between traditional sport participants, skateboarders, non-sport participants, and those participating in both traditional sports and skateboarding in the age group 13 to 16 years.

Specifically, the study sought to answer the following research questions:

1. Is there a difference in sensation seeking behavior between traditional sport participants, skateboarders, non-sport participants and those that participate in both traditional sports and skateboarding?

2. Is there a difference in sensation seeking behavior based on age between traditional sport participants, skateboarders, non-sport participants and those that participate in both traditional sports and skateboarding?

3. Is there a difference in sensations seeking behavior based on gender between traditional sport participants, skateboarders, non-sport participants, and those that participate in both traditional sports and skateboarding?

4. Is there a difference in sensation seeking behavior based on race/ethnicity between traditional sport participants, skateboarders, non-sport participants and those that participate in both traditional sports and skateboarding?

Purpose of the Study

The purpose of this study was to focus on sensation seeking behaviors between traditional sport participants, skateboarders, non-sport participants, and those participating in both traditional sports and skateboarding in the age range of 13 to 16 years. The data from this study could open a new line of research for researchers and provide better understanding of the skateboard sub-culture participants.

Need for the Study

There has been little scientific research conducted on skateboarding and skateboarders. Most of the research obtained in this area came from newspaper articles

that contained interviews with skateboarders, parents of skateboarders, and young teenagers. The most recent statistics on the number of skateboarders show that 13 million Americans picked-up a skateboard at least once in 2002, up from 5.4 million in 1993 according to the American Sports Data (Mckee, 2003). The number of Americans skateboarding has grown drastically since the early 1990's and has continued to sky rocket into 2007. Researchers need to find the reason compelling Americans to actively start skateboarding. With the rise in number of skateboarders, sports such as baseball have seen a decline in the number of youth participating in that sport (Goldman, 2004). The factors influencing the rise in skateboarding and decline in traditional sports need to be explored for clarity.

The perceptions of many parents and adults are negative toward teenage skateboarders. According to Andy McDonald (a professional skateboarder), many older adults view skateboarders as punks and thugs that get into trouble and participate in high-risk behaviors (Sappenfield, 1997).

With the growing number of children and teenagers participating in the sport or activity and the lack of scientific research in the area of skateboarding, a need to further the research was apparent. In the present study, an effort was made to determine whether perceptions of sensation seeking behavior between traditional sport athletes, skateboarders, non-sport participants, and those participating in both traditional sports and skateboarding are different.

Delimitations

The scope of the study was delimited to:

1. Boys and girls ages 13-16 years of age residing in Clark County, Nevada.

2. Within the first limitation only boys and girls who volunteered and whose parents also consented participated in the study.

3. Also within the first limitation boys and girls in middle school and high school physical education and health classes at school sites approving this research participated in the study.

4. Students for this study were given a modified version of the Sensation Seeking Scale for Youth to complete in class.

5. The study was conducted over a period from September 2006 to March 2007.

Limitations

The results of this study were limited by the following factors:

1. The students who participated in this study were volunteers from a purposive sample. As a result, the generaliziability of the study's results was delimited to the sample.

2. The modified version of the Sensation Seeking Scale for Youth was given to the students during a regularly scheduled class by their teacher and as such this might have caused a potential bias in responses.

3. The teacher's motivation to administer the modified version of the Sensation Seeking Scale for Youth survey could have varied from physical educator to physical educator. Some physical educators may have given the students more time to take or finish the survey, while others could have rushed their students.

4. The data for this study was collected using one type of survey from participants of several age groups.

Assumptions

The study was based on the following assumptions:

1. The skateboarders who chose to participate in the study will be of a sub-culture which will contain different skateboarding abilities.

2. The physical educators will be motivated to participate in handing out the survey since it is not mandatory.

3. The students involved in the study will thoroughly fill out the survey given they will have plenty of time in P.E. class.

4. Students will take their time to read the questions and fill out the survey honestly before handing it back.

6. The modified version of the Sensation Seeking Scale for Youth survey is an accurate, reliable, and valid instrument used for this study.

7. Directions for the survey are self-explanatory and will not require additional assistance.

Hypotheses

The study was designed to test the following null hypotheses:

1. There is no significant difference between sensation seeking measures between traditional sport participants, skateboarders, non-sport participants, and those that participate in both traditional sports and skateboarding.

2. There is no significant difference in sensation seeking measures based on age between traditional sport participants, skateboarders, non-sport participants and those that participate in both traditional sports and skateboarding.

3. There is no significant difference in sensation seeking measures based on gender between traditional sport participants, skateboarders, non-sport participants and those that participate in both traditional sports and skateboarding.

4. There is no significant difference in sensation seeking measures based on race/ethnicity between traditional sport participants, skateboarders, non-sport participants and those that participate in both traditional sports and skateboarding.

Definition of Terms

The following terms are defined to clarify their use in the study:

Skateboarders. Individuals who ride or perform tricks for recreational or competitive purposes.

Traditional Sports. Sports such as baseball, basketball, football, softball, volleyball, wrestling, track & field, tennis, swimming & diving, and lacrosse. These sports are available for middle school and high school students.

Traditional Sport Participant. A student who participates on an organized team in traditional sports such as those listed above.

Non-sport Participant. A student who does not participate in organized traditional sport teams. See traditional sports.

Extreme Sports. Sports such as skateboarding, snowboarding, BMX, motor cross, rock climbing, and in-line skating. These sports are not offered for middle school and high school students.

Alternative Sports. Are the same as extreme sports because they are not mainstream.

X-Games. A faux Olympics for extreme sports which began in 1995 and aired on ESPN (Goldman, 2004).

Sensation Seeking Scale. A survey to assess dimensions of sensation seeking behavior such as risk-taking, and adventure and thrill seeking (Zuckerman, 1979).

Risk Taking. A subscale used in the study to assess the need for varied, novel, and complex sensations (Zuckerman, 1979).

Adolescents. A group of individuals who are in the age range of 13 – 16 years old for this study.

CHAPTER 2

REVIEW OF THE RELATED LITERATURE

The literature related to skateboarding is reported in this chapter. For organizational purposes, the literature is presented under the following topics: (a) Number of Americans Skateboarding; (b) Adolescent Psychological Adjustment; (c) Skating Culture; (d) Sensation Seeking; (e) Theories Related to Sensation Seeking; (f) Sensation Seeking in Specific Athletic Situations; and (g) Summary.

Number of Americans Skateboarding

The number of skateboarders in America has risen in the past decade and has seen a huge increase in popularity among the nation's youth. According to a survey of the National Sporting Goods Association, there was a 10.2 percent increase in the number of Americans who skateboard from 1995 to 2000 (Statitude, 2001). More current numbers that come from the market research firm American Sports Data, Inc, found that there were 12.5 million skateboarders in 2002, up an astonishing 60% from 1999, when there was only 7.8 million skateboarders (Fetto, 2002). Not only has skateboarding seen a rise in participants, but extreme sports in general are seeing a huge increase among Americans. From the Sporting Goods Manufactures Association it has been stated that nearly 13 million people ages six and older skateboard, more than seven million snowboard, almost four million BMX ride, and more than three million wakeboard

(Wolff, 2003). One can only predict what the future will hold in the number of American's skateboarding.

One reason the popularity of the alternative sport known as skateboarding has taken off is ESPN airing the X-Games, a faux Olympics for extreme sports since 1995 (Goldman 2004). The X-Games hold competitions for skateboarders, in-line skaters, BMX riders, and dirt bike riders. It has grown in popularity so much that they now hold the winter X-Games for snowboarders and other winter alternative activities. According to a January 2000 Harris Interactive Survey, the X-Games are the second most appealing sporting event to children ages 6 to 17, ranking just behind the Olympic Games in appeal to those children aware of the event, and ahead of the Super Bowl, World Series, and World Cup ("Numbers show," 2002). Since the X-Games began in 1995, the National Sporting Goods Association states that only three sports registered growth participation for boys 7 to 17 years of age; skateboarding (129.6% increase from 1995-2000), snowboarding (119.3%), and golf (31.8%)("Numbers show," 2002).

According to Wolff (2003), extreme sports usually are not organized into leagues and teams administered and coached by adults. This is another reason why there has been a rise in the number of participants in skateboarding. More young children are starting to enjoy the independence of an alternative sport compared to the strictness of a traditional sport. Articles such as, Parents Guide to Youth Sports: Let your Youngsters Go to the Extreme and To the Extreme show that skateboarding and other alternative sports are becoming more popular than traditional sports (Wolff 2003, Ross 1995). The article From Ramp to Riches shows that eleven million kids use skateboards in America, more than the number in organized baseball (Goldman 2004). An even better example of how popular skateboarding has become was proven at the 2001 Nickelodeon Kids Choice

Awards. At this awards ceremony professional skateboarder Tony Hawk was selected favorite male sports star, beating out other nominees such as Tiger Woods, Kobe Bryant, and Shaquille O'Neal ("Numbers show," 2002). The growth of the X-Games and the independence of skateboarding indicate that numbers will continue to rise in the future (Fetto, 2002).

Adolescent Psychological Adjustment

Adolescence is a critical development stage in the bridge between childhood and adulthood (Newcomb & Bentler, 1988). This bridge is characterized be self-exploration, experimentation, and inconsistent attitudes that may be in direct conflict with societal norms (Newcomb & McGee 1991). Attitudes and behaviors during this maturation period may pose social interactive problems as well as reflect a lack of basic adolescent adjustment. Behaviors such as juvenile delinquency, deviant behavior, drug and alcohol abuse, vandalism, school disciplinary problems, disregard for the law, and disinterest in school activities have been defined as forms of adolescent maladjustment (Newcomb & McGee, 1991).

Huba and Bentler (1983) among others (Perkins, Gerlach, Broge, Grobe, & Wilson, 2000) have suggested that sensation seeking may be a personal characteristic that promotes specific problem behaviors and attitudes. Sensation seeking has been shown to have an affect on school behavior. Farley (1981) and Ang and Woo (2003) found that unstimulating educational experiences damper the intellectual curiosity of sensation seekers and presented a high probability for delinquent behavior. Blum, Beuhring and Rinehart (2000) argue that an unstimulating classroom leads to boredom in high sensation seekers and leads to behavior problems such as restlessness, excessive inappropriate

talking, and disruptive behavior. Blum et al. (2000) also found that adolescents who encounter school problems are more likely to be involved in risky health behaviors such as cigarette and alcohol use. Jaffe and Archer (1987) found that sensation seeking is the most powerful predictor of substance use and abuse. Additionally Ang and Woo (2003) found that sensation seeking was significantly related to hyperactivity, delinquency, and attitude which has been shown to link to substance use and abuse problems (Cloninger, Sigvardson, Przybeck, & Svrakic, 1995; Mitchell, 1999). A vast array of research has shown a strong link between sensation seeking, academic skill deficiency, antisocial and non-conforming behavior, and general dissatisfaction with school (Shinn, Ramsay, Walker, O'Neill & Steiber, 1987; Hops & Cobb, 1974; Fehrman, Keith, & Reimers, 1987; Kazdin, 1987; Carter & Stewin, 1999).

Skateboarding Culture

Skateboarding has received increased attention from academic scholars and sporting good corporations in recent years. Skateboarding is dominated by young men, whom traverse life between mainstream and alternative culture (Macdonald, 2005). Part of the supposed attraction to extreme sports, such as skateboarding, is the rebellious and unstructured arrangement of the sport, in contrast to traditional sports (Kay, 2005). Rather than being a physical activity, skateboarding is a way of life; it encompasses an entire cultural milieu with music, clothing, magazines and idols (Macdonald, 2005; Wheaton & Beal, 2003). Macdonald (2005) evaluated gender issues within the skate culture. He found that male skateboarders must achieve peer acceptance by mastering skills and attempting risky moves to warrant inclusion in their group. Skateboarders behave in aggressive and masculine manners, often in defiance of traditional sports and

mainstream views. They are commonly observed skating in public space in defiance of posted "No Skating" signs, and are generally all male. Skate culture while stereotyped as opposed to mainstream culture is usually identified with particular name brand shirts, caps, and boards not unlike athletes in traditional sports (Kelly, Pomerantz, & Currie, 2005; Macdonald, 2005; Wheaton & Beal, 2003). For some youth, just being identified as being a skateboarder is an important social status even if they do not actually skateboard (Kelly et al., 2005; Macdonald, 2005).

With a growing number of young women participating in skateboarding the skate culture and its historical gender norms, there has been a shift in the culture (Kelly et al., 2005 & Pomerantz, Currie, & Kelly, 2004). The feminine skater is quite contrary to conventional concepts about beauty, strength and sexuality. Kelly et al. (2005) and Pomerantz et al. (2004) evaluated how female skateboarders entered and became part of male dominated skate culture. Female skateboarders have had to prove their authenticity as "real" skaters by distinguishing themselves from their feminine peers. Kelly et al. (2005) found that class differences in typical high school venues were also present in the skate culture. Camaraderie was greatest between male and female skaters when their social class meshed. For example, working class skaters could easily bond together, whereas middle class skaters grouped together. As can be seen in traditional youth sport settings, those from a working class background were more likely to hold a rebellious attitude than those from the middle class. Kelly et al. (2005) and Pomerantz et al. (2004) observed that the skate culture was constantly changing and that individual skateboarders, both male and female, from every race and class structure, were contributing from their own experiences to the shift and re-defining of skate culture. Thus, skate culture is in a

constant state of flux, in which societal norms on behavior and acceptance compete with traditional views of competition, participation and acceptance.

Sensation Seeking

Sensation seeking has been defined as a "biologically based personality dimension with sensation seekers identified as those who seek varied novel or complex sensations or experiences (Zuckerman, 1979, p.10). Sensation seeking can also be viewed as a psychological trait where novel experiences and dangers are sought and excitement derived further encourages participation (Wann, 1997).

Sensation seeking has been found to be related to drug use and abuse and risky behaviors (Zuckerman, 1979; Segal, 1976). Risk-taking is viewed as an outcome of sensation seeking personality trait (Zuckerman, 1983; Cronin, 1991; Goma, 1991). Risk-taking can best be described using the examples of heading a ball in soccer, sliding headfirst in baseball, and diving for a pass in football. Risk-taking may play a significant role in predicting the likelihood of injury among youth during sport participation (Severson, Benthin, & Slovic, 1989). It has been noted that boys typically engage in more risk-taking activities than girls and assign the cause of their injuries more to luck than their own actions, and believe they are less likely to be injured while performing these risky activities (Morrongiello & Rennie, 1998). Past success in not getting injured while performing risky activities further encourages the continued practice of risk-taking and may potentially increase the likelihood of an athlete becoming injured (Horvath & Zuckerman, 1993).

Severson et al. (1989) found that adolescents who engaged in risky activity possessed higher risk characteristics. Additionally these adolescents reported a greater awareness of

the risks they were taking, less fear of the risks, and a general belief that they could control the risks.

Theories Related to Sensation Seeking

Risk taking, the willingness to participate in high arousal activities (sports) has been shown to be a result of sensation seeking behavior and attitude (Slanger & Rudestam, 1997). To further describe and support the contention for sensation seeking behavior three theories will be briefly discussed.

The theory of optimal sensory stimulation is predicated on the stance that the susceptibility to reduced or absent arousal (boredom) is present at varying levels among individuals and that the resultant need for stimulation at appropriate levels will be sought based on personal preference (Farley, 1985, 1986; Zuckerman, 1974, 1983, 1985).

The social learning theory of perceived self-efficacy provides filler between the generalized view of sensation seeking and the element of risk taking that is inherent in those pursuing achievement and mastery. Why is it that people will take higher risks in one part of their lives and be satisfied with less achievement in other areas? Bandura (1986) has postulated that perhaps both skill and self-belief of being able to perform the tasks is needed. Individuals choose to participate in activities they feel capable and provide challenge while holding their interests. In a greater sense an individual's perceived self-efficacy may direct their participation in risk-taking and sensation seeking activities. This does not mean that those with high sensation seeking have lower levels of anxiety, but rather that they experience less anxiety in specific types of experiences where risk-taking is greater. Risk takers experience greater anxiety and perceive higher risk in situations where they have no sense of control (Slanger & Rudestam, 1997).

In social-cognitive theory, adolescent sport participants with a sense of higher estimations of ability in a sport are more likely to try new, difficult, or risky skills than those with lower estimations of ability (Bandura, 1997). Both the estimation of one's ability and the related risk were positively related, with regards to the level of difficulty and potential for injury. However, Kontos (2004) found that increased risk taking did not directly relate to a greater incidence or risk of injury.

These theories while providing different aspects on sensation seeking are not fundamentally in opposition. Adolescents with high sensation seeking and optimal sensory stimulation tend to seek out high arousal activities. During participation in these high arousal activities they may find a level of success which further motivates their participation in higher risk activity (self-efficacy). As a result of success in risky activities these high sensation seekers gain a better sense of their capabilities and participate at or slightly above that capability level and reduce their injury potential by maintaining their performance level (social-cognitive). Measuring sensation seeking in various athletic situations may aid the coach or instructor in providing greater instruction, direction, motivation and support for adolescent athletes.

Sensation Seeking in Specific Athletic Situations

High sensation seekers are motivated by a need to experience new and exciting activities that provide a variety of physical and mental stimulation. They are susceptible to boredom and hold preference for alternative activities that provide a rush and thrill (Csikszentmihaly & Csikszentmihaly, 1988; Young 1990).

Gordon and Caltabiano (1996) in studying Australian youth ages 12 to 19, found that those adolescents with higher sensation seeking also reported the heaviest substance use

and abuse, and greater crime involvement. They suggested that this tendency for high sensation seeking may be a motivating factor for adolescent drug use and delinquency.

Severson et al. (1989) concluded from studying high school students that those adolescents engaging in risky activity and destructive behavior had high sensation seeking scores than those not participating in these behaviors.

In a study by Coetzee, VanWyk, and Steyn (2006) on the relationship between sensation seeking, gender, and preferences in viewing televised sport found a direct relationship between high sensation seeking and viewing violent combative sports. Males were more attracted to violent combative sport while females preferred more stylistic and artistic sport on television.

In studying rodeo riders, hang-gilder pilots, college basketball players, and college wrestlers, Rainey, Amunategui, Agocs, and Larick (1992) found that hang gilders had significantly higher sensation seeking scores than the other groups. This supported the notion that high-risk activity is related to sensation seeking.

Straub (1982) in attempting to investigate the sensation seeking among high and low-risk male athletes evaluated hang gliders, automobile racers and collegiate bowlers and found that hang gliders and racers scored significantly higher than the low-risk athletes.

Summary

The majority of the articles in the review of literature pertained to sensation seeking behaviors. Some of the studies have examined why individuals have different sensation seeking traits and risk taking behaviors. In addition, studies related to the skateboarding culture were referenced. It has been noticed by the American Sports Data, Inc, that there is a steady rise in the number of Americans skateboarding (Fetto, 2002). The literature in

the section shows that the theory of sensation seeking has and will continue to be used by researchers to investigate behaviors in various activities in hopes of expanding the knowledge base.

CHAPTER 3

PROCEDURES FOR COLLECTING DATA

The researcher investigated sensation seeking behavior between traditional sport participants, skateboarders, non-sport participants, and those that participate in both traditional sports and skateboarding in the age range of 13 to 16. The conduct of the study included the following organizational steps: (a) arrangements for conducting the study; (b) selection of subjects; (c) administration of the survey instrument; and (d) treatment of data.

Arrangements for Conducting the Study

The study was conducted in the Clark County School District upon receipt of a human subjects safeguard clearance from the University of Nevada Las Vegas and approval from individual school principals. The purpose, objectives, and details of the study were presented to both the students and their parents through the approval informed consent form.

The physical educators and health teachers at selected schools agreed to the distribution of the study survey, and coordinated the distribution of the informed consent forms at their sites. This study was conducted at several middle schools and high schools in the Clark County School District. The selection of schools to participate in the study was based on the willingness of the school principal and school physical educators.

Selection of Subjects

All of the subjects were volunteers and were living in Clark County, Nevada. The main criteria for participation in the studies included: (a) all subjects were skateboarders, or participants in traditional sports, or non-sport participants, and or those participating in both traditional sports and skateboarding; and (b) subjects were between the age of 13 and 16 years.

These criteria were selected so that results and reliability would be generalized to a population of adolescents, or similar age range of skateboarders. This population was selected because it contains the largest number of participants involved in skateboarding, and has the greatest potential to keep rising in numbers.

Administration of the Survey Instrument

In this study the modified version of the Sensation Seeking Scale (Zuckerman, 1979) for Youth (Appendix A) was used. Survey instrument was distributed to students. The modified version of the Sensation Seeking Scale for Youth was designed to measure the students' propensity toward risk-taking and sensation seeking. This version of the Sensation Seeking Scale for Youth contained questions on demographics and 19 items on sensation seeking based on a 5-point Likert scale. The Thrill and Adventure seeking subscale shows reliability having been used to assess involvement in sports or physically risky activities like parachuting or scuba diving (Deditius-Island & Caruso, 2002).

The distribution of this survey occurred at their school sites through the cooperation of the school physical educator or health teacher. Consent forms (Appendix B) were distributed to students and asked to have their parents read and approve participation by signing, as well as agreeing for themselves to participate. The consent forms for the

parent and youth explained the purpose of the study and the risks involved with participating in the study. The students were given 10 minutes to fill out the survey in class, after which it was returned to the investigator.

Treatment of Data

The null hypotheses state (a) there is no significant difference between sensation seeking measures between skateboarders, traditional sport participants, non-sport participants and those that participate in both skateboarding and traditional sports; (b) there is no significant difference between the sensation seeking measures based on age between traditional sport participants, skateboarders, non-sport participants and those that participate in both traditional sports and skateboarding; (c) there is no significant difference in sensation seeking measures based on gender between traditional sport participants, skateboarders, non-sport participants and those that participate in both traditional sports and skateboarding; (d) there is no significant difference in sensation seeking measures based on race/ethnicity between traditional sport participants, skateboarders, non-sport participants and those that participate in both traditional sports and skateboarding.

Data analysis was performed by evaluating the survey responses through SPSS 10.0. The independent variables included: gender, age, grade level, race/ethnicity, and self-identified group (skateboarder, traditional sport participant, non-sport participant, and participant in both skateboarding and traditional sports). The dependent variables were the survey responses to the 19 items graded on a Likert scale. Cross tabulation of responses were performed to assess trends and overall similarities between the groups with regards to answers. A factor analysis was performed to assess the factor loading of

the items. A modified Bonferroni test for planned comparisons was performed to accommodate the multiple analyses being conducted (Keppel, 1991). An ANOVA of the mean factor scores between the four groups was performed to assess differences between the groups. Subsequent post-hoc analyses (Tukey) were conducted pursuant to established statistical protocols to define the area(s) of significance between the groups (Keppel, 1991). A discriminant function analysis was performed to evaluate the predictive nature of the modified version of the Sensation Seeking Scale to identify group placement. Discriminant analysis allows one to assign classification of groups into a group that it more closely fits (Klecka, 1980).

CHAPTER 4

ANALYSIS OF DATA AND DISCUSSION OF RESULTS

The purpose of this study was to compare sensation seeking behaviors between traditional sport participants, skateboarders, non-sport participants, and those participating in both traditional sports and skateboarding in the age group 13 to 16 years.

The study was designed to test the following null hypotheses;

(1) There is no significant difference between sensation seeking measures between traditional sport participants, skateboarders, non-sport participants, and those that participate in both traditional sports and skateboarding.

(2) There is no significant difference in sensation seeking measures based on age between traditional sport participants, skateboarders, non-sport participants and those that participate in both traditional sports and skateboarding.

(3) There is no significant difference in sensation seeking measures based on gender between traditional sport participants, skateboarders, non-sport participants and those that participate in both traditional sports and skateboarding.

(4) There is no significant difference in sensation seeking measures based on race/ethnicity between traditional sport participants, skateboarders, non-sport participants and those that participate in both traditional sports and skateboarding.

The analysis of the data are presented in this chapter according to the following topics; (1) Data-gathering Instrument Distribution; (2) Demographic Data; (3) Factor Analysis; (4) Discriminant Function Analysis; (5) One-Way ANOVA of Group Means; and (6) Discussion of Findings.

Data-Gathering Instrument Distribution

Subjects for the study consisted of 209 student's ages 13 to 16 years in the Clark County School District. Students were given Informed Consent forms for themselves and their parents to read, approve, and sign (Appendix B). Those students returning both signed copies were allowed to participate in the study. During either their regularly scheduled physical education or health class, the students were given the modified version of the Sensation Seeking Scale for Youth to complete by their teacher (Appendix A). The competed surveys were then returned to the researcher for analysis.

Demographic Data

The participants of this study represent students' ages 13 to 16 years in the middle school and high school settings. Forty-seven percent of the participants were male and fifty-three percent female. Participants were asked to self-identify their ethnic affiliation. Of the 209 respondents, 62 (30%) were Hispanic, 102 (49.5%) White, 13 (6%) Black, 15 (7%) Pacific Islander, 1 (0.5%) Native American, and 13 (6%) selected other. A breakdown of the demographics by group is delineated in Table 1.

Factor Analysis

A factor analysis was performed on the 19 statements from the modified version of the Sensation Seeking Scale using a principal component extraction method with varimax rotation (Table 2). The 19 statements grouped into five subscales as shown on the table. Two subscales accounted for a combined 70.39% of the variance noted (Table 3). A review of the five subscales identified disclosed that five of the statements grouped either singularly or with another statement. It was decided that these five outliers should be omitted from inclusion in further analyses. Statements falling under Subscale 1 were identified as elements of the Thrill and Adventure Seeking subscale. Those statements aligning under Subscale 2 were identified as elements of the Risk-Taking subscale. The 19 statements utilized within the modified version of the Sensation Seeking Scale were taken directly from two subscales defined by Zuckerman (1979). In Zuckerman's subscales statements 1 through 10 were elements of Thrill and Adventure Seeking, and statements 11 through 19 were associated with Risk-Taking. As shown on Table 2 there is a close fit between what was found in the present study and that described by Zuckerman.

Discriminant Function Analysis

A 4 X 3 (Groups by Scale) design was used to analyze the data. A step-wise multiple discriminant function analysis was used to test hypothesis number 1 (Table 4). The goal of discriminant analysis is to classify cases into one of several mutually exclusive groups based on their values for a set of predictor variables (the responses to the modified Sensation Seeking Scale). One of the necessary assumptions of discriminant analysis is equality of group matrices (Klecka, 1980). A Box's M test of equality of covariance

matrices was performed to test the null hypothesis of equal population covariance. Table 5 delineates the log determinants of the Box's M analysis. Since all the log determinants are closely bounded and no significance is noted each of the four groups should be included in the discriminant analysis (Klecka, 1980).

Table 6 delineates the results of the discriminant function analysis of the sensation seeking scores for the four groups. The table illustrates the degree of success of the classification of the sample group and the percentage of cases correctly classified and misclassified. Of the 20 self-identified skateboarders, 18 (90%) responded on the scale in similar fashion to the sports players, while two of the skateboarders responded similarly to non-sports players. Skateboarders as a group did not respond on the Sensation Seeking Scale in a mutually exclusive manner and therefore there was a zero percent correct classification of skateboarders to their own group. Sports players on the other hand responded in a manner that strongly predicted their group membership. Of the 101 self-identified sports players, 87 (87.3%) were classified correctly. Overall 53.9% of the students were correctly classified to their respected groups given their sensation seeking score.

One-Way ANOVA of Group Means

Hypothesis 1- Group

Table 7 shows the means, standard deviations and univariate F-values for skateboarders, sport players, non-sport players, and those participating in both skateboarding and sports on the modified sensation seeking scale. As shown on Table 7, those participating in both skateboarding and sports had the lowest sensation seeking mean score, interpreted as the highest selection toward sensation seeking. Skateboarders

had the lowest Thrill and Adventure seeking subscale mean score (highest selection) followed closely by those participating in both skateboarding and sports. Three groups, skateboarders, sport players, and those participating in both skateboarding and sports had very similar Risk-Taking subscale mean scores as compared to the non-sport participants. A significant main effect for groups was found for the total sensation seeking mean score $F_{(3,204)} = 4.00$, $p < .01$ (Table 8). Due to the difference in group sizes a Welch and Brown-Forsythe test of equality of means was performed, which confirmed statistical significance between the groups (Table 9). A Tukey post hoc analysis showed that there was a significant difference in the total mean score for sensation seeking between the non-sport players and those participating in both skateboarding and sports $p=.03$ (Table 10).

A statistical main effect ($F_{(3,204)} = 2.81$, $p < .05$) for difference between groups for the Thrill and Adventure seeking subscale was found (Table 8). Subsequent post hoc analysis disclosed a significant difference ($p=.02$) between the non-sport player and the sports player (Table 11). A significant main effect ($F_{(3,204)} = 5.66$, $p < .01$) for difference between the group Risk-Taking subscale was found (Table 8). Subsequent post hoc analysis disclosed a significant difference ($p < .01$) between the sports player and the non-sports player (Table 11).

Hypothesis 2-Age

Means, standard deviations, and univariate F-values for sensation seeking scores and subscales by age are shown on Table 12. There were no significant differences between ages for the three items (Table 13).

Hypothesis 3- Gender

Means, standard deviations, and univariate F-values for sensation seeking scores and subscales by gender are shown on Table 14. There was a significant main effect for Thrill and Adventure seeking ($F_{(3,206)} = 4.93$, $p < .05$), but no significance found for the Risk-Taking subscale nor the total sensation seeking score (Table 15).

Hypothesis 4- Race/Ethnicity

Means, standard deviations, and univariate F-values for sensation seeking scores and subscales by Race/Ethnicity are shown on Table 16. There was a significant main effect for total sensation seeking mean score ($F_{(4,197)} = 3.49$, $p < .01$) and Risk-Taking ($F_{(4,204)} = 3.45$, $p < .01$) (Table 17). A post hoc analysis on total sensation seeking mean score disclosed a significant difference between White and Black students ($p < .01$) for the Sensation Seeking Scale (Table 18) and for the Risk-Taking subscale (Table 19).

Discussion of Findings

This section of the chapter will discuss and interpret the findings that were reported previously. Included in this section will be discussion on demographic information, findings from the modified Sensation Seeking Scale, as well as the results on Thrill and Adventure Seeking and Risk-Taking subscales for groups by age range, gender, and race/ethnicity.

A large distribution of information on sensation seekers has been collected on individuals ages 18 and up. The respondents of this study were in the age range of 13 to 16 years old. Of the 209 returned surveys, 98 (47%) were from males, and 110 (53%) were from females. Also, there were 56 (27%) 13 year olds, 42 (20%) 14 year olds, 20 (10%) 15 year olds, and 91 (44%) 16 year olds represented in this study. As shown by

ethnicity 163 (78%) were White, while 44 (21%) were represented as minorities. The respondents in this study also fell into sub-groups known as skateboarder 20 (12%), sports players 103 (49%), non-sports players 68 (33%), and both skateboarders and sport participants 18 (9%).

According to this study skateboarders and sports players had the highest selection toward sensation seeking. This finding is in accordance with other sensation seeking studies in that extreme sport participants have higher Thrill and Adventure and Risk-Taking levels than people who do not engage in extreme sports (Murray, 2003). It was also shown that a significant difference exists between the sports player and non-sports player on the Thrill and Adventure seeking and Risk-Taking subscales.

Two important components to the modified version of the Sensation Seeking Scale were race/ethnicity and gender. In this study it was shown that there was a significant difference between the total sensation seeking mean score between White and Black students. It was also found that males demonstrate a higher mean score than females for the Thrill and Adventure Seeking subscale.

CHAPTHER 5

SUMMARY, FINDINGS, CONCLUSIONS, LIMITATIONS, AND RECOMMENDATIONS

Summary

The purpose of this study was to focus on sensation seeking behaviors between traditional sport participants, skateboarders, non-sport participants, and those participating in both traditional sports and skateboarding in the age range of 13 to 16 years. Specifically the researchers set out to determine:

1. Is there a difference in sensation seeking behavior between traditional sport participants, skateboarders, non-sport participants and those that participate in both traditional sports and skateboarding?

2 Is there a difference in sensation seeking behavior based on age between traditional sport participants, skateboarders, non-sport participants and those that participate in both traditional sports and skateboarding?

3. Is there a difference in sensations seeking behavior based on gender between traditional sport participants, skateboarders, non-sport participants, and those that participate in both traditional sports and skateboarding?

4. Is there a difference in sensation seeking behavior based on race/ethnicity between traditional sport participants, skateboarders, non-sport participants and those that participate in both traditional sports and skateboarding?

The subjects were 209 13 to 16 year olds in middle schools and high schools from the Clark County School District. All participants completed a survey designed to answer the questions on sensation seeking behavior. The data were collected between the months of September 2006 to March 2007.

The data were analyzed using the statistical techniques of cross tabulation, factor analysis, and One-Way ANOVA. These tests were chosen to look at and compare the similarities and differences between skateboarders, sports players, non-sports players, and those participating in both skateboarding and sports. The Statistical Package for the Social Sciences (SPSS) version 10.0 was utilized for this study.

Findings

Hypothesis 1 – Modified Sensation Seeking Scale

The analysis of data revealed that there is a difference in sensation seeking measures in skateboarders and sports players as compared to non-sport players. A post-hoc analysis revealed that sports players and non-sports players showed a significant difference in the Thrill and Adventure seeking and Risk-Taking subscales. Bouter et al. (1988) found that there was a significant difference between skiers and non-skiers, in sensation seeking behavior. Biersner and LaRocco (1983) found a significant difference between scuba divers and non-scuba divers. Contrarily Rainey and Amunategui, (1992) found no difference in sensation seeking behavior among four athletic groups. They found that the items on the sensation seeking scale may not generally discriminate between athletic groups. This may well be due to the items that deal with attraction to physical activities. In our study it was shown that sport players and skateboarders possessed similar sensation seeking behavior and thus may not be dissimilar in nature.

This finding may very well dispell the belief that skateboarders are outcasts and trouble-makers. Instead perhaps these skateboarders should be seen as athletes in alternative (non-traditional) sports with similar attributes toward risk-taking, challenge and success.

Hypothesis 2 – Age

In terms of differences between age groups there was no significant difference. Slanger and Rudestam (1997) found using age as a covariate between low and high risk groups on sensation seeking there were no statistical differences. Murray (2003) found that extreme sport participants were significantly younger than the general population. When age was introduced as a covariate in our study, there were no significant differences in sensation seeking behavior. Zuckerman et al. (1978) found that age negatively correlated with Sensation Seeking and Risk-Taking with the greatest difference in behaviors occurring in the young.

Hypothesis 3 – Gender

The results of the study showed a significant difference in the Thrill and Adventure seeking subscale between the genders with males demonstrating a higher mean score. Zuckerman (1994) stated that males tend to score higher than females on the Sensation Seeking Scale – Form V and that inclusion of both genders in a sample would result in large standard deviations. As shown on Table 10, the standard deviations of the Risk-Taking and Sum scores for males and females are very similar and do not demonstrate a large variability in responses.

In a study by O'Jile et al. (2004) using the Sensation Seeking Scale – Form V version, found a significant gender difference on the Disinhibition scale of the Sensation Seeking Scale in head injured participants and a significant gender difference for all of the

subscales in the non-head injured group with males scoring higher than females. The Disinhibition subscale was not included in the present study.

Coakley (2001) contends that males find it socially desirable to perceive less risk in sports due to the prevailing masculine stereotype for males, in our society. McDaniel (2003) found a significant difference between males and females in their enjoyment of watching aggressive televised sports such as boxing, wrestling, rugby, ultimate fighting, and hockey. Boys tend to underreport anxiety levels based on similar socially desirable trends (Brustad, 1993). Girls are generally socialized differently in sports by parents and coaches away from aggressiveness, physical contact, and risk-taking (Kontos, 2004).

In a study by Kontos, (2004) with soccer players aged 11 to 14 years he found a significant difference in perceived risk and risk-taking with males reporting higher levels than females. This finding supports the conclusions of Morrongiello and Rennie (1998) who found that males participated in significantly more risk-taking. It was further found that males attributed their injuries to a greater extent to luck and accepted injury as inconsequential to their risk-taking behavior.

In our present study there were few females identified in both the skateboarding, and skateboarding and sports participation groups and thus an in-depth analysis regarding differences between the groups by gender was not feasible.

Hypothesis 4 – Race/Ethnicity

This study showed that there was a significant main effect for Sensation Seeking scores and the Risk-Taking subscale between Hispanic and Black students, and between White and Black students. None of the studies reviewed for this research project described and/or analyzed race and ethnicity variables with regards to sensation seeking behavior. This issue remains a gap in the existing literature with respect to the influence

and behavior attributes of students of diverse cultural backgrounds. In descriptive studies by Kelly et al. (2005) and Pomerantz et al. (2004) it was found that a change in the skate culture is occurring with a greater influx of participants from all social classes, race and ethic groups, as well as, both males and females participating.

Conclusions

Within the parameters of this study the following conclusions have been made.

(1) Skateboarders and sports players have similar sensation seeking attributes and are not inherently different in this behavioral aspect.

(2) Skateboarders and sports players have different sensation seeking attributes then non-sport participants.

(3) In the age group 13 to 16 years there is no difference in their sensation seeking attributes.

(4) There was a significant difference in gender with males scoring higher on the Thrill and Adventure seeking subscale.

(5) There was a significant difference in sensation seeking scores and Risk-Taking subscale scores between Hispanic and Black students and between White and Black students.

Limitations

After reviewing the findings of this study the following limitations were identified.

(1) The small sampling of female skateboarders and those participating in both skateboarding and sports may have skewed the gender analysis.

(2) The small sampling of skateboarders and those participating in both skateboarding and sports may have skewed group analysis.

(3) Geographical distribution of the population sample from the southeast and southwest regions of Clark County Nevada, which are generally of higher socioeconomic status, may not be generalizable to other geographic regions.

(4) The instrument used contained no means of verifying true self-identified membership in the four groups (skateboarder, sports player, non-sports player, and those participating on both skateboarding and sports).

(5) There was no accompanying instrument to concurrently validate each participant's survey responses in terms of consistency in completing the modified Sensation Seeking Scale.

Recommendations for Further Study

The following recommendations from this study are offered;

(1) Replicate the study in more diverse inner city neighborhoods.

(2) Seek out more female skateboarders to specifically assess their sensation seeking attributes.

(3) Utilize additional personality instruments to help discriminate between skateboarders and sport participants.

(4) Develop an instrument to evaluate the attributes of students participating in activities outside of traditional sports such as dance, band, stepping, karate, judo, and inline skating hockey.

(5) Compare the attributes of students participating in activities outside of traditional sports with those involved in sports and skateboarding.

(6) Compare the sensation seeking behavior of skateboarder's ages 13 to 16 years with college aged skateboarders.

(7) A study should be conducted to evaluate behavioral traits of skateboarders and athletes in specific areas such as alcohol and drug abuse, criminal activity, social acceptance and leisure activities.

(8) A study should be conducted to assess parental perceptions of their skateboarding children.

APPENDIX A

SENSATION SEEKING SCALE FOR YOUTH - MODIFIED

Sensation Seeking Scale - Modified

Sex _____ Race: Asian_____ Black_____ White_____
Age _____ Ethnicity: Hispanic_____ White_____ Black ___
Grade Level _____ Pacific Islander_____ Other_____

1) Which group below do you IDENTIFY best as belonging to? (Circle only one)

Skateboarder Sports Player Non-Sports Player Skateboarder & Sports Player

2) What recreation team sports have you played in the last year? (Circle your choices)

- Football - Baseball - Basketball - None
- Soccer - Volleyball - Softball - Gymnastics
- Track & Field - Inline Skating - Wrestling - Skateboarding
- Tennis - Swimming/Diving - Lacrosse - BMX Riding

3) What recreation activity (for enjoyment or hobby) have you participated in the last year? Please List

_____

Please place a check mark in the box to indicate your level of agreement to each statement.

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1) I often wish I could be a mountain climber.					
2) I sometimes like to do things that are a little freighting.					
3) I would not like to take up water-skiing.					
4) I would like to try surf-board riding.					
5) I would not like to learn to fly an airplane.					
6) I would like to go scuba diving.					
7) I would never want to try jumping out of a plane with or without a parachute.					
8) I like to dive off the high board.					
9) I would like to sail a long distance in a sail boat.					

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
10) I think I would enjoy the sensations of skiing very fast down a high mountain slope.					
11) I often act on the spur-of-the-moment without stopping to think.					
12) I get a real kick out of doing things that are a little dangerous.					
13) I never act impulsively.					
14) I like to test myself every now and then by doing something a little chancy.					
15) Many of my actions seem to be hasty.					
16) I'm not up for new experiences.					
17) I like to try new things just for excitement.					
18) I go for thrills in life when I get a chance.					
19) I do not like to experience new and different sensations.					

APPENDIX B

CONSENT FORMS

UNLV

University of Nevada Las Vegas
ASSENT TO PARTICIPATE IN RESEARCH

TITLE OF STUDY: **Student Perceptions on Sport Participation**

CONTACT PHONE NUMBER: 702-895-5473

1. My name is Charles Hackenheimer.

2. We are asking you to take part in a research study because we are trying to learn more about why teenagers like skateboarding and why teenagers decide to play other sports like football, baseball, and soccer. You are being asked to volunteer for this study because you are between the ages of 12 and 16 years.

3. If you agree to be in this study you will be asked to complete one survey during your PE class.

4. There is minimal risk to participating in this study. You will complete the survey without putting your name on the forms. You may skip questions if you like. No one will know what you wrote so you can feel comfortable giving your answers. You might feel a little embarrassed answering some questions but it will only last a short time.

5. There may not be any direct benefits to you. However the information we collect from this study will help PE teachers, and recreation leaders better understand why kids like to skateboard.

6. Please talk this over with your parents before you decide whether or not to participate. We will also ask your parents to give their permission for you to take part in this study. But even if your parents say "yes" you can still decide not to do this.

7. If you don't want to be in this study, you don't have to participate. Remember, being in this study is up to you and no one will be upset if you don't want to participate or even if you change your mind later and want to stop.

8. You can ask any questions that you have about the study. If you have a question later that you didn't think of now, you can call me 702-895-2493.

9. Signing your name at the bottom means that you agree to be in this study. You and your parents will be given a copy of this form after you have signed it.

PARTICIPANT NOTE: Please do not participate in this study if the Approval Stamp is missing or expired.

_____ _____

Print Name Date

_____

Signature of Student

University of Nevada, Las Vegas

Informed Consent

Department of Sports Education Leadership

Title of Study: Student Perceptions on Sport Participation

Investigator(s): Dr. R.R. Apache and Charles Hackenheimer

Contact Phone Number: 702-895-2493

Purpose of the Study

Your son/daughter is invited to participate in a research study. The purpose of this study is to compare the perceptions on sport participation by those involved in traditional sports (baseball, basketball, soccer and football) with participants in a non-traditional sport (skateboarding).

Participants

Your son/daughter is being asked to participate in the study because they are between the ages of 12 and 16 years. You are being asked to grant your son/daughter permission to complete a survey concerning sports participation.

Procedures

If you agree to grant your son/daughter permission to participate in this study, you will be asked to do the following: read this consent form thoroughly and upon agreement sign it on the following page, then inform your son/daughter you have agreed to allow him/her to complete the survey if they so choose. Your son/daughter will then return the consent forms to his PE Teacher and then complete the survey.

Benefits of Participation

There *may not* be direct benefits to you or your son/daughter as a participant in this study. However, we hope to learn more on why youth select participating in either traditional or nontraditional sports. This information will help teachers, coaches and recreation directors develop programs to allow youth to participate more and have greater opportunities.

Risks of Participation

There are risks involved in all research studies. This study may include only minimal risks. There is minimal risk to your son/daughter from participation in this study. There may be minor discomfort experienced by your son/daughter momentarily as they answer a question, however this discomfort will disappear upon answering the question.

Cost /Compensation

There will not be financial cost to you or your son/daughter to participate in this study. The study will take 5 minutes of your son/daughter's time. You and your son/daughter

will not be compensated for time involved with this study. *The University of Nevada, Las Vegas may not provide compensation or free medical care for an unanticipated injury sustained as a result of participating in this research study.*

Contact Information
If you have any questions or concerns about the study, you may contact Dr Apache at **702-895-2493.** For questions regarding the rights of research subjects, any complaints or comments regarding the manner in which the study is being conducted you may contact **the UNLV Office for the Protection of Research Subjects at 702-895-2794.**

Voluntary Participation
Your participation in this study is voluntary. You may refuse to participate in this study or in any part of this study. You may withdraw at any time without prejudice to your relations with the university. You are encouraged to ask questions about this study at the beginning or any time during the research study.

Confidentiality
All information gathered in this study will be kept completely confidential. No reference will be made in written or oral materials that could link you to this study. All records will be stored in a locked facility at UNLV for at least 3 years after completion of the study. After the storage time the information gathered will be shredded and destroyed.

Participant Consent:
I have read the above information and agree to participate in this study. I am at least 18 years of age. A copy of this form has been given to me.

_____ _____
Signature of Participant Date

_____ _____
Participant Name (Please Print) Student's Name

Participant Note: Please do not sign this document if the Approval Stamp is missing or is expired.

APPENDIX C

TABLES

Table 1. Demographics of Study Participants.

Demographics	Skateboarders	Sports Player	Non-Sports Player	Skateboarder & Sports Player
Gender				
Males	15	47	23	13
Females	5	56	45	5
Total	20	103	68	18
Age				
13	6	28	14	8
14	5	23	10	4
15	4	6	7	3
16	5	46	37	3
Total	20	103	68	18
Ethnicity				
Hispanic	4	32	24	2
White	10	51	28	13
Black	1	5	5	2
Native American	0	1	0	0
Pacific Islander	2	7	5	2
Other	2	5	6	0
Total	19	101	68	19

Table 2. Principal Component Matrix of the 19 statements on the modified version of the Sensation Seeking Scale

	Component				
Statement	1	2	3	4	5
1		.576			
2	.598				
3				.702	
4		.630			
5				.556	
6		.740			
7	.584				
8		.579			
9		.504			
10		.510			
11	.705				
12	.786				
13					.696
14	.680				
15	.721				
16			.851		
17	.477				
18	.540				
19			.739		

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization

Table 3. Factor Analysis of the 19 statements on the modified version of the Sensation Seeking Scale.

Component	Initial Eigenvalue			Rotation Sums of Squared Loadings		
	Eigenvalue	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	5.877	45.671	45.671	4.861	39.327	39.327
2	2.657	24.723	70.394	3.129	31.067	70.394
3	1.410	2.921	73.215	1.643	3.784	74.178
4	1.348	2.901	76.116	1.542	3.371	77.549
5	1.288	2.832	78.948	1.489	2.742	80.291
6	.808	2.311	81.259			
7	.772	2.228	83.487			
8	.689	2.100	85.587			
9	.672	1.947	87.534			
10	.607	1.864	89.398			
11	.540	1.754	91.152			
12	.422	1.745	92.897			
13	.362	1.723	94.620			
14	.332	1.698	96.318			
15	.298	.808	97.126			
16	.231	.798	97.924			
17	.225	.785	98.709			
18	.221	.735	99.444			
19	.198	.556	100.000			

Extraction Method: Principal Component Analysis

Table 4. Stepwise Discriminant Function Analysis of the Modified Sensation Seeking Scores for Skateboarders, Sports Players, Non-Sport Players, and Skateboarders & Sports Players.

Step	Variable Entered	Variable Included	Wilks' Lambda	Chi Square	Sig.
1	RT	1	.924	5.51*	.001
2	TA	2	.959	2.84	.039
3	SUM	3	.944	4.00*	.008

*p<.01 RT=Risk Taking subscale. TA = Thrill and Adventure Seeking subscale. SUM = Total of score on Modified Sensation Seeking Scale.

Table 5. Box's M test of Equality of Covariance Matrices to Test the Null Hypothesis of Equal Population Covariance Amongst the Groups.

Identified Group	Rank	Log Determinant
Skateboarder	3	7.712
Sports Player	3	8.035
Non-Sports Player	3	8.499
Skateboarder & Sports Player	3	8.175
Pooled within-groups	3	8.247

Box's M = 16.223
$F_{(18, 14629)} = .857, p = .632$

Table 6. Predicted Group Membership Based Upon Modified Sensation Seeking Score through Discriminant Function Analysis.

		Predicted Group Membership			
Actual Group	N	Skateboarders	Sports Players	Non-Sports Players	Skateboarders & Sports Players
Skateboarders	20	0(0%)	18(90%)	2(10%)	0(0%)
Sports Players	101	0(0%)	87(87.3%)	13(12.7%)	1(1%)
Non-Sports Players	66	0(0%)	43(69.1%)	23(30.9%)	0(0%)
Skateboarders & Sports Players	18	0(0%)	14(77.7%)	3(16.7%)	1(5.6%)

Overall correct classification was 53.9%.

Table 7. Means, Standard Deviations, and Univariate F-Values for Skateboarders, Sports Players, Non-Sport Players, and Skateboarders & Sports Players on the Modified Sensation Seeking Scale.

Test Component	Skateboarders (n=20)		Sports Players (n=103)		Non-Sports Players (n=67)		Skateboarders & Sports Players (n=18)		F
	M	SD	M	SD	M	SD	M	SD	
TA	1.96	.58	2.25	.61	2.42	.67	2.07	.69	3.33*
RT	2.65	.62	2.61	.69	3.07	.86	2.59	.75	5.66**
TOTAL	44.70	8.16	46.72	9.59	50.68	10.58	43.27	11.91	4.00**

*p<.05
**p<.01

Table 8. ANOVA of Means for Modified Sensation Seeking Scale and Subscales by Groups.

	Sum of Square	DF	Mean Square	F	Sig.
Sensation Seeking Score					
Between Groups	1206.882	3	402.249	4.008	.008*
Within Groups	20176.367	201	100.380		
Total	21383.249	204			
Thrill and Adventure Seeking Subscale					
Between Groups	235.658	3	78.553	2.811	.041*
Within Groups	5700.760	204	27.945		
Total	5936.418	207			
Risk-Taking Subscale					
Between Groups	350.693	3	116.898	5.666	.001*
Within Groups	4208.764	204	20.631		
Total	4559.457	207			

* Significant main effect at $p<.05$

Table 9. Test of Equality of Means for Difference in Group Sizes for the subscales.

	Statistic	DF1	DF2	Sig.
Thrill and Adventure Seeking Subscale				
Welch	2.762	3	49.03	.054
Brown-Forsythe	2.762	3	86.8	.047*
Risk-Taking Subscale				
Welch	4.742	3	50.16	.005*
Brown-Forsythe	5.977	3	98.38	.001*

* Significant main effect at $p<.05$

Table 10. Post-hoc Analysis (Tukey) of the Significant Main Effects for the Sensation Seeking Scale Score

	Mean Difference	Standard Error	Significance
Sensation Seeking Score			
Skateboarder			
Sports Player	-2.022	2.452	1.000
Non-Sports Player	-5.981	2.257	.122
Skateboarder & Sports	1.422	3.255	1.000
Sports Player			
Skateboarder	2.022	2.245	1.000
Non-Sports Player	-3.959	1.585	.080
Skateboarder & Sports	3.444	2.563	1.000
Non-Sports Player			
Skateboarder	5.981	2.557	.122
Sports Player	3.959	1.585	.080
Skateboarder & Sports	7.404*	2.664	.036
Skateboard & Sports			
Skateboarder	-1.422	3.255	1.000
Sports Player	-3.444	2.563	1.000
Non-Sports	-7.404*	2.664	.036

* Significance at $p < .05$

Table 11. Post-hoc Analysis (Tukey) of the Significant Main Effects for the Thrill and Adventure Seeking, and Risk-Taking Subscales

	Mean Difference	Standard Error	Significance
Thrill and Adventure Seeking			
Skateboarder			
Sports Player	.6107	1.196	.967
Non-Sports Player	-2.107	1.249	.418
Skateboarder & Sports	1.150	1.590	.914
Sports Player			
Skateboarder	-.610	1.196	.967
Non-Sports Player	-2.718*	.713	.007
Skateboarder & Sports	.539	.125	.980
Non-Sports Player			
Skateboarder	2.107	1.249	.418
Sports Player	2.718*	.773	.007
Skateboarder & Sports	3.257	1.301	.103
Skateboard & Sports			
Skateboarder	-1.150	1.590	.914
Sports Player	-.539	1.251	.980
Non-Sports	-3.257	1.301	.103
Risk-Taking			
Skateboarder			
Sports Player	.203	1.110	1.000
Non-Sports Player	-2.570	1.155	.163
Skateboarder & Sports	.344	1.475	1.000
Sports Player			
Skateboarder	-.203	1.110	1.000
Non-Sports Player	-2.774*	.711	.001
Skateboarder & Sports	.140	1.161	1.000
Non-Sports Player			
Skateboarder	2.570	1.155	.163
Sports Player	2.774*	.771	.001
Skateboarder & Sports	2.915	1.203	.098
Skateboard & Sports			
Skateboarder	-0.344	1.000	1.000
Sports Player	-.140	1.000	1.000
Non-Sports	-2.915	.098	.098

* Significance at $p < .01$

Table 12. Means, Standard Deviations, and Univariate F-Values for Age on the Modified Sensation Seeking Scale.

Test Component	Age 13 (n=56)		Age 14 (n=41)		Age 15 (n=20)		Age 16 (n=88)		F
	M	SD	M	SD	M	SD	M	SD	
TA	18.37	4.69	19.21	6.07	20.15	6.53	18.62	5.13	.654
RT	16.73	6.07	16.30	4.64	17.50	4.07	16.47	4.98	.330
SUM	46.59	8.02	47.71	11.7	50.85	10.9	43.27	10.6	.888

* $p < .05$ RT= Risk Taking subscale. TA = Thrill and Adventure Seeking subscale. SUM = Total of score on Modified Sensation Seeking Scale.

Table 13. ANOVA of Means for Modified Sensation Seeking Scale and Subscales by Age

	Sum of Squares	df	Mean Square	F	Sig.
Sensation Seeking Scale					
Between Groups	279.760	3	93.253	.888	.448
Within Groups	21103.489	201	104.992		
Total	21383.249	204			
Thrill and Adventure Seeking Subscale					
Between Groups	56.516	3	18.839	.654	.582
Within Groups	5879.902	204	28.823		
Total	5936.418	207			
Risk-Taking Subscale					
Between Groups	22.043	3	7.348	.330	.803
Within Groups	4537.414	204	22.242		
Total	4559.457	207			

* Significant main effect at $p < .01$

Table 14. Means, Standard Deviations, and Univariate F-Values for Gender on the Modified Sensation Seeking Scale.

Test Component	Male (n=95)		Female (n=110)		F
	M	SD	M	SD	
TA	17.94	5.10	19.58	5.47	4.93*
RT	16.22	4.34	16.94	4.97	1.21
SUM	46.39	9.81	48.45	10.5	2.08

* $p < .05$ RT= Risk Taking subscale. TA = Thrill and Adventure Seeking subscale. SUM = Total of score on Modified Sensation Seeking Scale.

Table 15. ANOVA of Means for Modified Sensation Seeking Scale and Subscales by Gender

	Sum of Squares	df	Mean Square	F	Sig.
Sensation Seeking Scale					
Between Groups	217.387	1	217.387	2.085	.150
Within Groups	21165.862	203	104.265		
Total	21383.249	204			
Thrill and Adventure Seeking Subscale					
Between Groups	138.739	1	138.739	4.930*	.027
Within Groups	5797.679	206	28.144		
Total	5936.418	207			
Risk-Taking Subscale					
Between Groups	26.771	1	26.771	1.217	.271
Within Groups	4532.686	206	22.003		
Total	4559.457	207			

* Significant main effect at $p < .05$

Table 16. Means, Standard Deviations, and Univariate F-Values for Race/Ethnicity on the Modified Sensation Seeking Scale.

Test Component	Hispanic (n=60)		White (n=101)		Black (n=13)		Pacific Islander (n=15)		Other (n=13)		F
	M	SD	M	SD	M	SD	M	SD	M	SD	
TA	18.51	4.76	18.42	5.50	22.23	5.67	18.37	5.60	20.00	5.87	1.70
RT	16.86	4.72	15.91	4.65	20.76	4.98	16.43	4.01	17.61	3.59	3.45*
SUM	47.38	9.81	46.03	10.2	56.38	11.4	47.13	9.27	51.08	9.36	3.49*

*$p < .01$ RT= Risk Taking subscale. TA = Thrill and Adventure Seeking subscale. SUM = Total of score on Modified Sensation Seeking Scale.

Table 17. ANOVA of Means for Modified Sensation Seeking Scale and Subscales by Race/Ethnicity

	Sum of Squares	df	Mean Square	F	Sig.
Sensation Seeking Scale					
Between Groups	1414.667	4	353.417	3.499*	.009
Within Groups	19896.828	197	100.999		
Total	21310.495	201			
Thrill and Adventure Seeking Subscale					
Between Groups	193.746	4	48.436	1.704	.151
Within Groups	5686.235	200	28.431		
Total	5879.980	204			
Risk-Taking Subscale					
Between Groups	291.931	4	72.983	3.459*	.009
Within Groups	4220.479	200	21.102		
Total	4512.410	204			

* Significant main effect at $p < .01$

Table 18. Post-hoc Analysis (Tukey) of the Significant Main Effects for Ethnicity for the Sensation Seeking Scale Score

	Mean Difference	Standard Error	Significance
Sensation Seeking Score			
Hispanic			
White	1.353	1.638	1.000
Black	-9.001	3.074	.038
Pacific Islander	.250	2.901	1.000
Other	-3.693	3.074	1.000
White			
Hispanic	-1.090	1.638	1.000
Black	-10.354*	2.961	.006
Pacific Islander	-1.103	2.780	1.000
Other	-5.047	2.961	.899
Black			
Hispanic	9.001	3.074	.038
White	10.354*	2.961	.006
Pacific Islander	9.251	3.808	.160
Other	5.307	3.941	1.000
Pacific Islander			
Hispanic	-.250	2.901	1.000
White	1.103	2.780	1.000
Black	-9.251	3.808	.160
Other	-3.943	3.808	1.000

* Significance at $p < .01$

Table 19. Post-hoc Analysis (Tukey) of the Significant Main Effects for Ethnicity for the Thrill and Adventure Seeking, and Risk-Taking Subscale

		Mean Difference	Standard Error	Significance
Thrill and Adventure Seeking				
Hispanic				
	White	.090	.860	1.000
	Black	-3.714	1.626	.234
	Pacific Islander	.141	1.495	1.000
	Other	-1.483	1.626	1.000
White				
	Hispanic	-.090	.860	1.000
	Black	-3.805	1.571	.163
	Pacific Islander	.050	1.434	1.000
	Other	-1.574	1.571	1.000
Black				
	Hispanic	3.714	1.626	.234
	White	3.805	1.571	.163
	Pacific Islander	3.855	1.990	.542
	Other	2.230	2.091	1.000
Pacific Islander				
	Hispanic	-.150	1.495	1.000
	White	-.050	1.434	1.000
	Black	-3.855	1.990	.542
	Other	-1.625	1.990	1.000
Risk-Taking				
Hispanic				
	White	.957	.743	.798
	Black	-3.900	1.403	.107
	Pacific Islander	.431	1.290	.998
	Other	-.746	1.403	.991
White				
	Hispanic	-.957	.743	.798
	Black	-4.857*	1.352	.009
	Pacific Islander	-.525	1.235	.996
	Other	-1.703	1.352	.811
Black				
	Hispanic	3.900	1.403	.107
	White	4.857*	1.352	.009
	Pacific Islander	4.331	1.715	.177
	Other	3.153	1.801	.549
Pacific Islander				
	Hispanic	-.431	1.290	.998
	White	.525	1.235	.996
	Black	-4.331	1.715	.177
	Other	-1.177	1.715	.976

* Significance at $p < .01$

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