

University of Nevada, Reno

**The Perceived Susceptibility Of Young Adults Sustaining
A Traumatic Brain Injury While Participating in
Risk Taking Behavior**

A thesis submitted in partial fulfillment of the requirements for
the degree of Master of Science in Nursing

by

Amanda M. Stallings

Dr. Stephanie DeBoor/Thesis Advisor

May, 2016

**© Amanda M. Stallings 2016
All Rights Reserved**



THE GRADUATE SCHOOL

We recommend that the thesis
prepared under our supervision by

AMANDA MARIE STALLINGS

Entitled

**The Perceived Susceptibility Of Young Adults Sustaining A Traumatic Brain
Injury While Participating In Risk Taking Behavior**

be accepted in partial fulfillment of the
requirements for the degree of

MASTER OF NURSING

Stephanie DeBoor, Ph.D., Advisor

Shannon Richard, M.S.N., Committee Member

Marian Berryhill, Ph.D., Graduate School Representative

David W. Zeh, Ph.D., Dean, Graduate School

May, 2016

Abstract

The purpose of this study was to examine the perceived susceptibility of young adults sustaining a traumatic brain injury while participating in risk taking behaviors. The Health Belief Model provided the conceptual framework for this study. An author created demographic questionnaire including risk behavior, the Five Factor Personality Traits, the Health Belief Model survey, and Knowles's Risk Taking questionnaire were emailed out to all students of the University of Nevada, Reno. A total of 1,251 students responded to the survey and 932 completed the survey to its entirety, which were used to complete data analysis. These results were used to identify personality traits of risk takers and evaluate their perceived susceptibility of sustaining a traumatic brain injury. The results of this study showed a small, positive correlation between increased risk taking and age, degree, gender and their perceived susceptibility of sustaining a traumatic brain injury. The high risk taking group was shown to agree with the answer "helmets are unnecessary if you are experienced in the recreational activity". From these results, implications for future research; test, retest design along with development of trauma prevention education and practice are discussed.

TABLE OF CONTENTS

ABSTRACT.....	i
TABLE OF CONTENTS.....	ii
LIST OF TABLES.....	iv
CHAPTER I INTRODUCTION.....	1
Background and Significance.....	1
Problem Statement.....	4
Purpose of Study.....	4
Research Questions.....	4
Theoretical/Conceptual Framework.....	5
Chapter Summary.....	6
CHAPTER II LITERATURE REVIEW.....	7
Perceived Susceptibility.....	7
Risk Taking Behavior.....	8
Chapter Summary.....	10
CHAPTER III METHODOLOGY.....	11
Research Design.....	11
Research Questions.....	11
Description of Setting.....	11
Sample & Recruitment.....	12
Human Subjects Protection.....	12
Data Generation and Analysis Procedure.....	12
Instruments and Data Generation.....	12
Procedure.....	14
Data Analysis.....	15
Budget and Funding.....	15
Chapter Summary.....	16
CHAPTER IV RESULTS.....	17
Description of Sample.....	17
Data Results.....	18
Chapter Summary.....	26
CHAPTER V DISCUSSION.....	27
Description of the Study.....	27
Summary of Findings.....	27
Personality Traits.....	28
Perceived Susceptibility and Risk Taking Behavior.....	28
Relationships to Literature.....	29
Limitations.....	30
Discussion.....	30
Implications for Nursing Practice.....	31
Recommendations for Future Research.....	33

CONCLUSION.....	34
APPENDICES	35
Appendix A: Demographics	35
Appendix B: Risk Taking Questionnaire.....	36
Appendix C: Risk Taking Behavior.....	38
Appendix D: Five Factor Personality Traits	39
Appendix E: Health Belief Questionnaire	40
Appendix F: Letter to the Student.....	43
REFERENCES	44

LIST OF TABLES

TABLES	
Table 1.0 Sample Demographics	18
Table 2.0 Risk Taking Behaviors of 18 to 24 Year Olds.....	20
Table 3.0 Risk Taking Behaviors of 25 Year Olds and Older.....	20
Table 4.0 Recreational Activities Per Age Group	21
Table 5.0 Perceived Susceptibility Amongst the High Risk Taking Group	22
Table 6.0 Perceived Susceptibility By Age Group	23
Table 7.0 Perceived Susceptibility By Degree	24
Table 8.0 Perceived Susceptibility by Gender.....	25
Table 9.0 Perceived Susceptibility of Sustaining a TBI	26

Chapter I

Introduction

According to the Center for Disease Control (CDC) and Prevention (2012) trauma is an injury or wound to a living body caused by the application of external force or violence. Trauma is considered the number one cause of death in Americans ages 1 to 46 (National Trauma Institute, 2014). Overall, trauma is the third leading cause of death in the U.S. Annually, traumatic events account for 41 million Emergency Room (ER) visits and 2 million hospitalizations; the economic burden is estimated to have an annual cost of \$585 billion (National Trauma Institute, 2014). Traumatic Brain Injury (TBI) accounts for 30% of injury-related deaths annually (CDC, 2014).

Background and Significance

Traumatic brain injuries account for 275,000 hospitalizations per year, with costs for care exceeding \$60 billion annually. According to the CDC (2015) individuals 15 to 19 years of age are at highest risk for developing a TBI. Managing patient care needs following hospitalization is an ongoing process for patients and their families. Prevention of TBIs in this at risk population is a challenge; proper educational programs are imperative.

A TBI can be defined as “a blow or jolt to the head or a penetrating head injury that disrupts the function of the brain” (Chino, LaValley, Haff, Harris & Rivers, 2010, p. 38). Severity of a TBI can range from mild to severe. Nevada is one of 30 states funded by the CDC to report TBI occurrence. These same authors noted that in 2005, 460 deaths occurred in the state of Nevada from TBI with 79.8% of TBI deaths being males. Additionally, those between the ages of 15 to 24 accounted for the highest rates of hospitalizations in Nevada involving TBI. It is estimated that approximately 5.3 million Americans suffer long-term disabilities in relation to activities of daily living at some level from TBIs (Chino et al., 2010).

Finally, these same authors recommend improvement in seat belt use, reduction in driving under the influence, promoting helmet use during sports and off-road activities in the state of Nevada. Educational programs are one way to support these recommendations within the state.

Traumatic injury remains the leading cause of death among young adults (Harrison, Berry & Jamieson, 2012). TBI is identified as the most prevalent type of injury among this population, along with diagnosis of fractured skull. Motor vehicle accidents and sport related injuries are identified as the major cause of TBI in this population. This study addresses the fact that a quarter of these head injuries, resulted in high threat to life injuries. These patients will battle complications from their head injuries for the rest of their lives, leading to increased medical costs, making this of public health importance. Australia has implemented road safety interventions against drinking and driving, and speeding and driving while fatigued; unfortunately they have not seen a reduction in hospitalizations due to motor vehicle accidents. Harrison, et al. (2012) state young adults are inexperienced, reckless, possibly under the influence, and driving less durable cars when they experience accidents, thus contributing to their injuries.

According to Kimbler, Murphy and Dhandapeni (2011), approximately 33% of Americans are unfamiliar with the term TBI. These injuries result in long-term disabilities including emotional disturbances, cognitive difficulties, language disturbances and neurobehavioral issues. These same authors identified that motor vehicle accidents and falls typically cause moderate to severe TBIs. These types of TBIs may produce an obvious loss of consciousness and confusion. Mild TBIs (concussions) produce more subtle symptoms, which may contribute to an underreporting or seeking medical treatment for this category of injury, even a mild TBI can predispose the patient to long-term cognitive issues (Kimbler et al., 2011). This is considered a public health issue, as TBIs are more prevalent than breast cancer, AIDS, multiple sclerosis, and spinal cord injury combined. Kimbler et al. (2011) found that with an emphasis on

increasing physical activity among the nation's youth, there is also an increase in high-impact sports participation. Despite education on the use of helmets, these authors found that the rate of mild TBIs increased as well. Unfortunately, young adults may not seek medical attention following a mild TBI for a variety of reasons; lack of knowledge regarding symptoms, fear of being restricted from normal activities, being weak, thus possibly increasing their risk of long-term effects.

Motor vehicle accidents, falls, and high-impact sports are viewed as common causes of TBI in the young adult population (Harrison, Berry, & Jamieson, 2012). When a young adult participates in risk taking behavior, it increases their risk of sustaining a TBI. Popham, Kennison and Bradley (2011) conducted a study related to ageism and sensation-seeking/risk taking behaviors in young adults. According to Merriam-Webster (2015) ageism is defined as "prejudice or discrimination against a particular age-group and especially the elderly" (p. 1). Popham et al. (2011) found an increase in ageist attitude or behavior subsequently had an increased effect on risk taking behaviors. Young adults were viewed to have a fear of aging, so they would participate in risk taking behavior in order to distance them from the future, even death. This invoked feelings of strength and invulnerability following risk taking behavior.

Gullone and Moore (2000) define risk taking as "the participation in behavior which involves potential negative consequences (or loss) balanced in some way by perceived positive consequences (or gain)" (p.393). Risk taking can be categorized as thrill seeking, rebellious, reckless or anti-social. Individual characteristics are described as sensation seeking, temperament and impulsivity (Gullone & Moore, 2000). Risk taking is also perceived as valuing the relationship between rewards and losses, short term and long-term consequences (Skeel, Neudecker, Pilarski & Pytlak, 2007). By using John Digman's five factor personality model these authors identified that extraversion, openness to experience and agreeableness are related to social risk taking behavior. Furthermore, neuroticism and conscientiousness are correlated with

less appropriate risk taking such as rebellion and anti-social behavior (Skeel et al., 2007).

Identifying these characteristics in an individual may assist with the preparation of educational programs towards the prevention of trauma related to risk taking behavior.

Problem Statement

Traumatic Brain Injuries not only affect the individual, but also the family, healthcare workers, and the community. In 2010 approximately 2.5 million people suffered a TBI (CDC, 2014). These range from a minor concussion to a severe head injury. With the changes to the face of U.S. healthcare with the Affordable Care Act and older adults staying active much longer; resources can be stretched or unavailable (HHS.gov, 2015). With the number of inpatients increasing, it is imperative that aggressive preventative care be utilized to decrease medical costs and keep patients safe. Young adults have characteristics that increase their risk taking behaviors. Young adults may not feel susceptible to TBIs from their risk taking behaviors. Lack of perception/knowledge between cause and effect may decrease feelings of susceptibility. In addition to identification of risk taking behaviors, educating young adults about traumatic brain injuries can help reduce incidence of TBI (Popham, Kennison, & Bradley, 2011).

Purpose of Study

The purpose of this study was to identify self-perceived susceptibility to traumatic injury, specifically TBIs, in relation to key characteristics of risk taking behavior in young adults, ages 18 to 24. This information may assist in the development of future educational opportunities for trauma injury prevention.

Research Questions

The following research questions are addressed in this study:

1. What are identifiable personality traits and behaviors that put young adults at risk for traumatic brain injury?

2. What is the perceived susceptibility of risk taking behavior in young adults that present with risk taking characteristics?

Theoretical/Conceptual Framework

The Health Belief Model (HBM) created by Irwin Rosenstock (1974) was utilized to guide this study. This model was developed to explain preventive health behaviors. Rosenstock, Strecher and Becker (1988) updated this model to focus on perceived threat to predict preventative health behavior. There are five key characteristics of this model which include the following definitions (Rosenstock, 1974):

Perceived susceptibility: The individual's perception of their susceptibility to a disease or condition. Some may view themselves as highly susceptible, while others deny any possibility of injury or disease.

Perceived seriousness: One's belief in the seriousness of effects from the disease or injury.

Perceived benefits of taking action: One's perceived susceptibility to a disease or illness will affect the actions taken on one's behalf to prevent the disease or illness from occurring.

Barriers to taking action: Barriers to taking action may include inconvenience, cost, unpleasantness, or possible pain/discomfort and may detour a person from taking action.

Cues to action: An individual's view on the levels of susceptibility and seriousness in relation to acting in prevention of disease or injury.

According to the HBM, individuals behave in a particular way based on how they perceive their surroundings. Consequently, in order for an individual to take action to avoid a disease or injury, there must be a belief that they are personally susceptible to that disease or injury. The purpose of this study is to identify self-perceived susceptibility to traumatic injury, specifically TBIs, in relation to key characteristics of risk taking behavior in young adults, ages

18 to 24. The results of this study may assist in the development of educational opportunities for prevention of traumatic injury.

Summary

As healthcare professionals, it is our job to assess vulnerable, at risk populations and implement preventative care and education for their needs. It has been shown that young adults are at risk for TBIs, which can affect them throughout their lifespan. Thoroughly assessing self-perceived susceptibility and individual behaviors of this population may assist to create educational opportunities specific to TBI.

Chapter II

Literature Review

A search for information pertaining to risk taking behavior(s), perceived susceptibility, and traumatic brain injury began with a computerized review of the literature in CINHALL, Pub Med, and Google™. Most of the literature review focused on treatments after a TBI has occurred, whether it is in the acute care, rehab, or outpatient settings. There is paucity in the literature related to risk taking behaviors associated with TBI. The following literature based on research utilizing the components of the Health Belief Model is used to inform and provide basic comparative knowledge for analysis of students and findings within the current proposed study.

Perceived Susceptibility

The Health Belief Model has been used in research to determine populations' perceived susceptibility, benefits, and barriers. The Health Belief Model was utilized to investigate college students' beliefs regarding eating and physical activity and their perception to obesity (Kim, Ahn & No, 2012). An author-developed questionnaire structured from the Health Belief Model was distributed to subjects of this study. The author's found their hypothesis of high benefit and low barriers influenced their populations' behavior towards eating and risk of obesity. The findings showed evidence that college student's health beliefs increased their knowledge of healthy nutrition. It also showed the health classes and activities sponsored by the university had a positive effect on the attitudes and behaviors of college students. The authors did note that although this population did appear to have the knowledge of how to prevent disease, they might not act on it. They propose that perceived susceptibility and severity could have more influence on their behavior. The limitations of this study were a small sample size, thus limiting generalizability of the study. The study did demonstrate that the Health Belief Model could be utilized and tailored to be appropriate to any study pertaining to a health concern or illness.

Similarly, Ulleberg & Rundmo (2003) utilized the Health Belief model to examine the relationship between adolescents and their perceived risks to injuries while driving. Findings indicated that adolescents were found to underestimate their perceived risk to injury while driving. Sensation-seeking, aggressive and social deviances were associated with risk taking driving behaviors. Risk perception was found to be a low association with risk behavior.

According to van der Plight (1998), risk is perceived by one as the likelihood or severity of a negative outcome. An individual practices precautionary behavior when the perceived severity and vulnerability are high. Results showed a positive correlation between vulnerability and preventative behavior. It is imperative that an individual is aware that the risks exist and that the risk is significant and can affect people. Lastly, individuals have to realize they are vulnerable to the risk. Only after these ideas are considered may it be possible to have behavioral change based on perceived severity of one's health. Interestingly, van der Plight (1998) found that individuals perceived themselves to be less likely than their peers to be at risk. They tend to perceive their risk of experiencing a negative event below average. Perceived risk influences future behavior. Attention should be made to factors that may influence one's perception of risk. If the individual denies risk and avoids information regarding perceived risks, they are likely to consider themselves to not be vulnerable.

Risk Taking Behavior

An example of the Health Belief Model predicting behavior in prevention of injury is evident in a study conducted by Ross, Thomas-Ross, Rahman, and Cataldo (2010). An author-developed questionnaire tailored to undergraduate students was used to assess the use of bicycle helmets. The questionnaire examined each aspect of the Health Belief Model and the results identified that this population would wear a helmet only if mandated by law, but otherwise would not; this could be indicative of a cue to action result. Only 12% of the respondents stated they wore helmets. The findings of the study supported that the population that wore helmets reported

more perceived vulnerability, benefits and cues to action. They had higher sensitivity to severity of consequences and identified fewer barriers than the population who didn't wear a helmet. Limitations of this study included convenience sampling and lack of diversity; the respondents were 65% female and 83% Caucasian.

Popham, Kennison, and Bradley (2011) stated that ageism and risk taking behavior could be affected by personal characteristics, social factors and health risks. Some personal characteristics included desire for stimulation, thrill/adventure seeking, experience seeking, disinhibition, and susceptibility to boredom. Social factors included negative attitude about aging, drinking, smoking/tobacco use, illegal drug use and careers involving danger/risk including sports and gambling. Health risks included multiple sex partners, drug use and drinking. These characteristics were assessed in a young adult, undergraduate population. Findings showed significant correlation between the sensation-seeking scale and ageist attitudes; including a positive correlation between risk taking and ageist behavior. The findings concluded that an increased perception of ageism predisposed this young adult population to risk taking behavior. This study's limitations included convenience sampling of students from one geographical site who were enrolled in a psychology course for credit. There was a lack of diversity in the sampling limiting generalizability of the findings.

Gullone and Moore (2000) examined the five factor model of personalities. The study was conducted amongst Australian adolescents' age 11 to 18 years. The study found that substance-abusing youths displayed personality traits of creativity, independence, unconventionalism, and assertiveness. Thrill seeking activities were seen as more socially acceptable and included dangerous sports and sexual experimentation. Reckless behaviors had negative social and health outcomes. These behaviors were more acceptable to the adult population and included unprotected sex, drinking, sharing needles, and reckless driving. High levels of self-esteem were shown to decrease risk taking behaviors. In relation to the five factors

of personalities there were traits associated with each personality. Neuroticism was related to antisocial, anxiety, anger, impulsiveness and vulnerability. Extraversion was seen as excitement seeking, gregarious and assertiveness. Agreeableness was seen as trust, straightforwardness and compliance. Conscientiousness was seen as rebellious and reckless. The authors identified that the Neuroticism-Extraversion-Openness (NEO) Five factor inventory model has vastly been utilized with adults, but not with adolescents to be a limitation of this study. This may be why openness to experience was not a significant predictor of risk taking behavior. Other limitations included convenience sampling and self-report.

Conversely, a study conducted by Skeel, Neudecker, Pilarski & Pytlak (2007) found that there were no relationships between personality traits and rebelliousness risk taking. Undergraduate students (n = 70) completed a demographic survey, the adolescent risk taking questionnaire (ARQ), the five factor inventory, and the balloon analogue risk task. Results of the study did not support the hypothesis that an outgoing personality including extraversion, openness to experience and agreeableness would have positive correlation with risk taking behavior in undergraduate students. A significant limitation of the study was that the ARQ is not a common tool used in the young adult population, potentially explaining the lack of correlation between an outgoing personality and risk taking behaviors. Other limitations identified were self-report, gender imbalance and generalizability due to age.

Summary

Research has shown that one's perceived susceptibility to risk is based on their overall perception of the severity of a negative outcome. If an individual feels a negative outcome is more severe, then they perceive themselves to be susceptible. Additionally identified, is that one's own perceived risk is generally lower than that of their peers. Finally, in combination with characteristics identified in the Five Factor Model to include sensation seeking, aggression and thrill seeking; risk taking behavior becomes probable.

Chapter III

Methodology

The purpose of this study was to identify self-perceived susceptibility to traumatic injury, specifically traumatic brain injuries, in relation to key characteristics of risk taking behaviors in young adults, ages 18 to 24.

Research Design

The research design for this study is a non-experimental, descriptive, correlational cohort research study. According to Polit and Beck (2012), descriptive statistics are used to define the data in percentages and/or means. Correlational research is used to describe the relationship among variables. The variables identified in this study were based on the participant's demographics, risk taking behaviors, the Five Factor Personality traits and the Health Belief Model's five key descriptors. An author-developed survey along with a modified version of Knowles's (1976) Risk Taking Questionnaire was utilized for this study. This type of instrument (survey) has been found to be most suitable for this population and purpose, as it "is designed to obtain information about the prevalence, distribution, and interrelations of phenomena in a population" (Polit & Beck, 2012, p. 264).

Research Questions

This study attempted to answer the following questions:

- 1.) What are identifiable personality traits and behaviors that put young adults at risk for traumatic brain injury?
- 2.) What is the perceived susceptibility of risk taking behavior in young adults that present with risk taking characteristics?

Description of Setting

The survey was administered online through Survey Monkey. Following the approval of the University of Nevada, Reno Internal Review Board (IRB), a master list of all student email

addresses was obtained from the registrar's office. With the use of Survey Monkey, the participant was directed to a link to complete the survey. With the use of the demographic questions on the survey, the author was able to review the differences between responses of the age groups. The main age group examined in this study was those 18 to 24 years of age.

Sample and Recruitment

A convenience sample of the university's current student body was utilized for this study. Students were recruited through email provided by the University of Nevada, Reno's student list serve. The email sent by the author contained the following: An introduction letter, explanation of the study and its significance, and subject's rights per the Institutional Review Board (IRB) guidelines and the link to Survey Monkey. According to Nevada Today (2014), there were 19,934 total students as of fall 2014 with the average age being 23.8. A list of emails for the current student body was obtained from the registrar's office and included a total of 19,548 email addresses. An age of less than 18 was the only noted exclusion criteria for this study. Subject demographics were collected for comparison purposes.

Human Subjects Protection

Approval for this study was obtained from the University of Nevada, Reno's Internal Review Board (IRB) for the protection of human subjects. By the student participant accessing the link and completing the survey implied consent. The survey ensured complete confidentiality, by excluding any identifiable characteristics including name or email.

Data Generation and Analysis Procedures

Instruments and Data Generation

Student Demographic Questionnaire (Appendix A). A researcher-developed student demographic questionnaire was utilized to identify characteristics of the respondents, which included age, gender, educational level, ethnicity and a question related to knowledge of traumatic brain injury (TBI).

Knowles Risk Taking Questionnaire (Appendix B). Approval was obtained from Dr. Eric Knowles (personal communication, October 15, 2015) via email communication to utilize his questionnaire to assess risk taking behavior. Wording of the original questionnaire was updated for this study. This questionnaire was utilized to assess an individual's consistency in engaging in risk taking behaviors (Knowles, 1976). The questionnaire consists of 20 statements on a 5-point Likert scale ranging from 1 "Strongly Agree" to 5 "Strongly Disagree". Total scores for this instrument range from 10 (low risk taker) to 100 (high risk taker). The 9 risk motivated items were scored reversely so that a high score indicates risk motivation. The initial use of this tool showed an internal consistency measured at 0.85 (Eadington, 1976).

The risk group used for analysis was established as those who scored >63.68 on the Knowles Risk Taking Questionnaire. This score was based on the following criteria. The mean risk summary score was 51.78 ($N = 932$; $SD = 11.9$; $min = 20$; $max = 93$); one SD above the mean = 63.68. A Spearman's Rho Correlation was run to assess the relationship between those who scored above a 63.68 on the Knowles Risk Taking questionnaire and the perceived susceptibility questions within the Health Belief Questionnaire.

Risk Taking Behavior (Appendix C). The Knowles Risk Taking Questionnaire was followed by a 6-question researcher developed survey relating to risk taking behavior such as gambling, using alcohol, etc. This questionnaire helped identify risk taking behaviors present in the participants 18 to 24 years of age.

Five Factor Personality Traits. (Appendix D). Based on the tiered organization of the five factor model of personality traits (extraversion, agreeableness, conscientiousness, neuroticism, and openness to experience) (Gullone & Moore, 2000; McCrae & John, 1991) a 10-statement personality scale was created by the researcher to identify personality traits in risk taking individuals. A Likert scale of 1 to 5 was utilized to identify a relation between these

personality traits and risk taking behaviors. Scores for this survey range from 5 to 50. A score of 50 indicates a higher propensity to be associated with risk taking behaviors.

Health Belief Questionnaire (Appendix E). The first five questions of the Health Belief Model questionnaire are utilized to identify an individual's perceived susceptibility to a disease or condition. Some may view themselves as highly susceptible, while others deny any possibility of injury or disease (Rosenstock, 1974).

Upon review of the literature, there was no identifiable questionnaire specifically designed for the purpose of assessing the Health Belief concepts to TBI. This researcher created questionnaire was used to assess the participant's beliefs relating to the five key concepts in Rosenstock's Health Belief Model (HBM). It includes perceived susceptibility, perceived seriousness, perceived benefits to taking action, barriers to taking action, and cues to action. There were a total of 18 questions asked to indicate the five key concepts of the HBM. Each question was answered by indicating yes or no. The participant was also asked to indicate which recreational activities they participate in that might require the use of a helmet.

Procedure

Informational Letter to the Student. (Appendix F). This letter was created and sent to the students via email to inform and instruct them about the study and how to participate in the study.

Contacting Students. The researcher obtained a master list of student emails with the assistance and approval of the University of Nevada, Reno registrar's office. As part of the distribution of the emails, there were two rounds of emails sent to the participants, the first initial email and then a reminder email. The survey was distributed starting on December 11th, 2015. The emails were sent out initially in groups of 500 to decrease the risk of being cited as spam. Google will only allow 2,500 emails to be sent per day, so it took approximately eight to nine days to distribute 19,548 emails. During the first round of emails, approximately 500 emails per

day were unable to be delivered due to being flagged as spam. For the second round of emails, the author sent them in batches less than 100. The second round of emails were completed on January 9th, 2016 and the survey was closed on January 20th, 2016. This time frame was chosen, as the participants were on winter break and had more time to complete the survey. A total of 1,251 surveys were completed, but not all surveys were completed to its entirety with regards to the Knowles Risk Taking Questionnaire, so only 932 totally completed surveys were utilized for analysis. Convenience sampling was utilized for this study. Survey Monkey was utilized as it allowed the participant to complete their survey via any technology that provides connection to the Internet.

Data Analysis

Data was collected anonymously from Survey Monkey and analyzed utilizing the latest version of the Stastical Package for the Social Science (SPSS) and Stata/SE, data analysis and statistical software (Version 14). Descriptive Statistics (mean) were used to assess student demographics. The survey was compiled of ordinal and ratio levels of measurement. For the purpose of statistical analysis Spearman's Rho Correlation Coefficient was utilized to analyze the ordinal measurements. This is most appropriate when assessing the strength relationship between two variables (Pallant, 2010).

Budget and Funding

The author provided all funding for this study. Fees associated with Survey Monkey are \$300 for one year and include statistical analysis. The author funded the rental of the SPSS for \$59.98 for the semester to analyze the data.

Summary

This chapter describes the study design, location, sample and the intent of the research regarding recruitment, privacy, and informed consent to protect those choosing to participate in this study. This chapter also illustrates instrumentation that was utilized in this study for the purpose of data generation. Levels of measurement and statistical analysis were identified as Spearman's Correlation Coefficient. All budget and funding were provided by the author.

Chapter IV

Data Results

Description of Sample

A convenience sampling was utilized for this study. An informational letter was prepared in accordance with the university IRB and included purpose, guidelines, and instructions for the study. Emails were sent to 19,548 students from the University of Nevada, Reno requesting their participation in this study. The survey letter was sent twice (once as an initial emailing and the second as a follow-up reminder). There were 1,251 returned surveys, approximately 6% of the total student body sample size. Any surveys from those who were less than 18 years of age were removed from analysis of the survey based on inclusion/exclusion criteria. Additionally, incomplete surveys were removed for final analysis. In total, 932 surveys were utilized for data analysis. The 932 respondents accounted for 4.77% of the total population.

Student Demographic Questionnaire. Demographics were collected in reference to age, gender, educational enrollment level, ethnicity, and one question pertinent to the knowledge of a Traumatic Brain Injury (TBI). Of the total participating subjects, 74.4 % were within the 18 to 24 age group and 25.6% were in the 25 years of age or older group. Of the participating respondents, approximately 33% identified as male, 67% identified as female, and 0.11% identified as transgender. The majority of the sample (81.34%) were undergraduate students. Ethnicity of the sample was skewed with the majority of respondents (75%) being Caucasian/white. When subjects were asked if they knew what a TBI was, 94.5% responded yes. Table 1.0 presents the breakdown of the demographics collected for all 932 respondents.

Table 1.0

Sample Demographics

	Total and (%) of 18-24 year olds	Total and (%) >25 years of age
Male	225 (24.1%)	84 (9.01%)
Female	468 (50.2%)	154 (16.52%)
Transgender	0 (0%)	1 (0.11%)
Undergraduate Student	649 (69.64%)	109 (11.7%)
Masters Student	33 (3.54%)	93 (9.99%)
Doctoral Student	11 (1.18%)	37 (3.96%)
White or Caucasian	503 (53.97%)	198 (21.24%)
African American	16 (1.72%)	3 (0.32%)
Hispanic	75 (8.05%)	23 (2.47%)
Native American	6 (0.64%)	1 (0.11%)
Asian	69 (7.40%)	7 (0.75%)
Other	24 (2.58%)	7 (0.75%)
Yes-I know what a TBI is	649 (69.64%)	232 (24.89%)
No- I know what a TBI is	44 (4.72%)	7 (0.75%)

Data Results

The research questions that guided this study are addressed with the results of the surveys:

1. What are identifiable personality traits and behaviors that put young adults at risk for traumatic brain injury?
2. What is the perceived susceptibility of risk taking behavior in young adults that present with risk taking characteristics?

Five Factor Personality Tool. As previously identified, this tool was created utilizing the Five Factor Personality Model (Gullone & Moore, 2000) to identify personality traits in risk taking individuals. There were 10 sets of paired personality characteristics placed on a Likert Scale ranging from 1 to 5. Respondents were asked to choose the number closest to the trait that they believed to be most closely associated with their personality. For example, the first set of paired traits, were “Timid 1 vs Assertive 5”. The respondent then rated themselves on whether they felt

they were more timid or assertive. Possible scoring ranged from 10 to 50, with 40 or more indicating a higher propensity to risk taking.

Unfortunately, there was limited variability in the results utilizing this tool, so there was not enough deviation to go one degree above the standard deviation. Most of the results clustered around the mid score for this instrument. Based on these results, the researcher is unable to provide a conclusive answer for Question 1 related to personality traits of risk taking individuals.

Of interest, the one individual who scored highest on the Five Factor Personality Tool (4/5 Assertive, 3/5 Outgoing, 4/5 Suspicious, 3/5 Opposing, 5/5 Competence, 5/5 Spontaneous, 3/5 Anxious, 5/5 Angry, 3/5 Realist, and 5/5 Variability; total score of 40) was the only respondent to score within the 90 to 99 ranking group in relation to the Knowles Risk Taking Questionnaire. This group was identified to be the risk takers in relation to the Knowles Risk Taking Questionnaire.

Risk Taking Behaviors. The following tables (Table 2.0 and Table 3.0) represent how the total sample answered the following questions related to at risk taking behaviors by age groups. Not all 932 participants answered each of the questions. There were 692 respondents from the 18 to 24 year old group and 239 from the over 25 age group that completed this section of the survey. Of note, the two highest percentages of risk taking behaviors for the 18 to 24 year olds were, “I drive over the speed limit” (45.6%) and “I drink alcohol” (22.6%). Similar behaviors were found in the 25 years old and over group. The highest percentage was found in “I drive over the speed limit” (39.9%) and “I drink alcohol” (27.7%).

Table 2.0

Risk Taking Behaviors of 18 to 24 year olds

18-24 years of age	Never	Rarely	Occasionally	Often	Frequent	Total Responses
I Gamble	529 (76%)	112 (16%)	40 (6%)	9 (1%)	2 (<1%)	692
I drink alcohol	144 (21%)	142 (21%)	248 (36%)	113 (16%)	43 (6%)	690
I smoke cigarettes	584 (85%)	61 (8%)	26 (4%)	6 (<1%)	13 (2%)	690
I engage in illegal drug use	489 (71%)	75 (11%)	70 (10%)	31 (4%)	27 (4%)	692
I drive over the speed limit	76 (10%)	87 (13%)	211 (31%)	191 (28%)	123 (18%)	688
I participate in high impact sports	351 (51%)	143 (21%)	99 (14%)	51 (7%)	47 (7%)	691

Table 3.0

Risk Taking Behaviors of 25 Year Olds and Older

25 years or older	Never	Rarely	Occasionally	Often	Frequent	Total Responses
I Gamble	133 (56%)	73 (31%)	27 (11%)	3 (1%)	3 (1%)	239
I drink alcohol	26 (11%)	59 (24%)	87 (37%)	55 (23%)	11 (5%)	238
I smoke cigarettes	191 (79%)	23 (10%)	14 (6%)	5 (2%)	6 (3%)	239
I engage in illegal drug use	175 (73%)	32 (13%)	24 (10%)	4 (2%)	4 (2%)	239
I drive over the speed limit	16 (7%)	50 (22%)	77 (31%)	54 (23%)	41 (17%)	238
I participate in high impact sports	119 (50%)	47 (20%)	47 (20%)	13 (5%)	13 (5%)	239

Recreational Activities by Age Group. The following table (Table 4.0) depicts the percentage of participants, per age group, that participate in the following recreational activities. These questions were posed as part of the Health Belief Questionnaire. Bicycling was identified as the most frequent recreational activity for both age groups. Notably, 40% to 44.2% of the respondents answered that they are not at risk for a TBI related to their recreational activity, when in reality all of the activities listed are causative for TBI.

Table 4.0

Recreational Activities Per Age Group

Activity	18-24 years of age	25 years or older
Bicycle	352 (50.8%)	145 (60.7%)
Longboard	79 (11.4%)	13 (5.4%)
Ski	164 (23.7%)	60 (25.1%)
Snowboard	154 (22.2%)	51 (21.3%)
ATV	129 (18.6%)	46 (19.2%)
I participate in recreational activities that put me at risk for TBI	No-306 (44.2%) Yes-387 (55.8%)	No-95 (40%) Yes-144 (60%)

Health Belief Questionnaire and Knowles Risk Taking Questionnaire. Correlation was identified in relation to two of the perceived susceptibility questions (Q 3, “Helmets are unnecessary if you are experienced in the recreational activity” and Q1, “I participate in recreational activities that put me at risk for traumatic brain injury”) and age, gender, degree sought, and if the participant felt they were at risk for a traumatic brain injury. The risk group used for analysis was established as those who scored >63.68 on the Knowles Risk Taking Questionnaire. This score was based on the following criteria. The mean risk summary score was 51.78 (N = 932; SD = 11.9; min = 20; max = 93); one SD above the mean = 63.68.

High Risk Taking Group. The following table (Table 5.0) depicts the results of those respondents who identified as high risk takers and all questions within the Health Belief Questionnaire. A small positive correlation was noted amongst the high risk taking group and Q 3, “helmets are unnecessary if you are experienced in the recreational activity”, $r = 0.2777$, $p = 0.0004$.

Table 5.0

High Risk Taking Group

	Risk Taking Group		
	> 63.68		
	obs	<i>r</i>	<i>p</i>
I participate in recreational activities that put me at risk for traumatic brain injury.	159	0.1677	0.0346
Wearing a helmet is important to me while participating in recreational activities.	159	-0.0834	0.2962
Helmets are unnecessary if you are experienced in the recreational activity.	159	0.2777	0.0004
Helmets are unnecessary when riding short distances.	158	0.0855	0.2852
Recreational Activities can be dangerous.	159	-0.0076	0.9244

High Risk Taking by Age Group. Table 6.0 depicts the results of the 18 to 24 year olds in the high risk taking group and the Health Belief Questionnaire. A small positive correlation was found between this age group and Q 1, “I participate in recreational activities that put me at risk for traumatic brain injury”, $r=0.2009$, $p = 0.0247$. Additionally, a medium positive correlation was found between age 18 to 24 year olds in the high risk taking group and Q 3, “helmets are unnecessary if you are experienced in the recreational activity”, $r = 0.2985$, $p = 0.0007$.

Table 6.0

18 to 24 Year Old Age Group and Health Belief Questionnaire

	AGE			AGE		
	18-24			>25 years		
	obs	<i>r</i>	<i>p</i>	obs	<i>r</i>	<i>p</i>
I participate in recreational activities that put me at risk for traumatic brain injury.	125	0.2009	0.0247	34	0.0284	0.8732
Wearing a helmet is important to me while participating in recreational activities.	125	-0.0642	0.4772	34	-0.0147	0.4069
Helmets are unnecessary if you are experienced in the recreational activity.	125	0.2985	0.0007	34	0.1703	0.3356
Helmets are unnecessary when riding short distances.	124	0.1336	0.1390	34	-0.1196	0.5004
Recreational Activities can be dangerous.	125	-0.0116	0.8975	34	n/a	n/a

Varying Degrees. Table 7.0 identifies the results between the Health Belief Questionnaire and students of varying degree programs. Undergraduates in the high risk taking group were also found to have a medium positive correlation with Q 3 “helmets are unnecessary if you are experienced in the recreational activity”, $r = 0.3027$, $p = 0.0004$. The Master’s students were found to have a large positive correlation with this same question, $r = 0.5595$, $p = 0.0242$.

Table 7.0

Responses by Degree in Relation to the Health Belief Questionnaire

	Degrees								
	Undergraduate			Master's			Doctoral		
	obs	<i>r</i>	<i>p</i>	obs	<i>r</i>	<i>p</i>	obs	<i>r</i>	<i>p</i>
I participate in recreational activities that put me at risk for traumatic brain injury.	134	0.1314	0.1301	16	0.3152	0.2344	9	0.4833	0.1875
Wearing a helmet is important to me while participating in recreational activities.	134	-0.0764	0.3803	16	-0.2061	0.4437	9	0.1841	0.6354
Helmets are unnecessary if you are experienced in the recreational activity.	134	0.3027	0.0004	16	0.5595	0.0242	9	-0.5219	0.1495
Helmets are unnecessary when riding short distances.	134	0.1364	0.1162	15	0.0176	0.9504	9	-0.5219	0.1495
Recreational Activities can be dangerous.	134	-0.0138	0.8746	16	n/a	n/a	9	n/a	n/a

Gender. In relation to gender and the Health Belief Questionnaire, these findings are depicted in Table 8.0. Males in the high risk taking group showed a medium positive correlation in relation to Q 3, “helmets are unnecessary if you are experienced in the recreational activity”, $r = 0.3367, p = 0.0024$ and Q 1, “I participate in recreational activities that put me at risk for traumatic brain injury”, $r = 0.3477, p = 0.0017$.

Table 8.0

Gender and the Health Belief Questionnaire

	Gender			Gender		
	Male			Female		
	obs	<i>r</i>	<i>p</i>	obs	<i>r</i>	<i>p</i>
I participate in recreational activities that put me at risk for traumatic brain injury.	79	0.3477	0.0017	80	0.0237	0.8344
Wearing a helmet is important to me while participating in recreational activities.	79	-0.1553	0.1717	80	-0.011	0.9232
Helmets are unnecessary if you are experienced in the recreational activity.	79	0.3367	0.0024	80	0.2192	0.0507
Helmets are unnecessary when riding short distances.	78	0.0167	0.8846	80	0.0167	0.8846
Recreational Activities can be dangerous.	79	n/a	n/a	80	-0.0143	0.8998

Perceived Susceptibility for TBI. There were a total of 159 identified high risk taking respondents. Table 9.0 illustrates the results of those identified high risk takers, the first five (perceived susceptibility) questions of the Health Belief Questionnaire, and their risk of sustaining a TBI. A medium positive correlation was found between the high risk taking group stating “No” that they are not at risk for a TBI and the perceived susceptibility question 3, “helmets are unnecessary if you are experienced in the recreational activity”, $r = 0.3171$, $p = 0.0024$. A small positive correlation was also found between the high risk taking group stating “Yes” that they are at risk for a TBI and the perceived susceptibility question 3, “helmets are unnecessary if you are experienced in the recreational activity”, $r = 0.2469$, $p = 0.0176$.

Table 9.0

Perceived Susceptibility of Sustaining TBI

	I am at Risk for a TBI			I am at Risk for a TBI		
	No			Yes		
	obs	<i>r</i>	<i>p</i>	obs	<i>r</i>	<i>p</i>
I participate in recreational activities that put me at risk for traumatic brain injury	67	0.1486	0.2301	92	0.0147	0.8893
Wearing a helmet is important to me while participating in recreational activities	67	-0.0840	0.4991	92	-0.0683	0.5175
Helmets are unnecessary if you are experienced in the recreational activity	67	0.3171	0.0089	92	0.2469	0.0176
Helmets are unnecessary when riding short distances	67	0.2381	0.0523	91	-0.0513	0.6291
Recreational Activities can be dangerous	67	0.0160	0.8978	92	-0.0554	0.5996

Summary

Data were analyzed using descriptive statistics and Stata. The responses remained anonymous through this process. The participants who scored greater than > 63.68 on the Risk Taking Questionnaire were used to evaluate relationships between perceived susceptibility of sustaining a TBI in relation to age, gender, degree and their perceived risk of sustaining a TBI. These relationships were identified in tables 2.0 through 9.0. Spearman Rho's Correlation Coefficient was utilized to analyze these relationships. Findings will be discussed further in Chapter V.

Chapter V

Discussion

Description of Study

The purpose of this study was to identify self-perceived susceptibility to traumatic injury, specifically traumatic brain injuries, in relation to key characteristics of risk taking behavior in young adults, ages 18 to 24. This study also examined the young adult's perception of sustaining a traumatic brain injury; specific to those who scored greater than a 63.68 on the Knowles Risk Taking questionnaire, which is 1 SD above the survey mean (51.78). The results showed that there was a positive correlation in regards to those who scored higher than a 63.68 in relation to age, degree, gender and their perceived susceptibility of sustaining a traumatic brain injury. This chapter will provide discussion of the findings, limitations, implications of nursing practice and future research.

Summary of Major Findings

A total of 1,251 surveys were obtained in this study and 932 fully completed surveys were used for analysis. It is worth noting that these numbers represent only 4.77% of the university's current student body surveyed. While there was a significant amount of data generated; data were analyzed in an attempt to answer the key questions of the study, which included:

1. What are identifiable personality traits and behaviors that put young adults at risk for traumatic brain injury?
- 2.) What is the perceived susceptibility of risk taking behavior in young adults that present with risk taking characteristics?

Additionally, the survey produced results in relation to the Health Belief Model questionnaire. For the purpose of this study, the information relating to perceived susceptibility was exclusively analyzed.

Personality Traits

An attempt to find significance in personality traits of high risk taking individuals was not successful within this study. There were 10 sets of paired personality characteristics placed on a Likert Scale ranging from 1 to 5. Respondents were asked to choose the number closest to the trait that they believed to be most closely associated with their personality. For example, the first set of paired traits, were “Timid 1 vs Assertive 5”. The respondent then rated themselves on whether they felt they were more timid or assertive. Possible scoring ranged from 10 to 50, with 40 or more indicating a higher propensity to risk taking.

Unfortunately, there was limited variability in the results utilizing this tool, so there was not enough deviation to go one degree above the standard deviation. Most of the results clustered around the mid score for this instrument. Based on these results, the researcher is unable to provide a conclusive answer for Question 1 related to personality traits of risk taking individuals.

Perceived Susceptibility and Risk Taking Behaviors

There was some discrepancy in the results of the Risk Taking Behavior survey. Not all 932 participants responded to all possible behaviors, but from the answers that were provided, the study identified driving over the speed limit as the most frequent risk taking behavior among 18 to 24 year olds at 45.6%. This same behavior was also found in the 25 and older group, but at a slightly lower percentage (39.9%). This may be explained by the development of the limbic system with age. There is a linear increase between age and impulse control in relation to risk taking (Casey, Jones, & Hare, 2008). Probably of less impact, is that at the age of 25, automobile insurance rates begin to drop based on prior driving records (DMV.org). This same source identifies that drivers within the 16 to 20 year range tend to drive above the speed limits. Those

who are 16 to 20 have a 3 times greater rate of accident-related deaths than for those who are over 20 years of age, which probably provides more of an explanation for the decrease in percentages.

The second highest noted risk taking behavior among both groups was the use of alcohol. In this circumstance frequency of use was reversed between the groups. The 25 and older group reported a slightly higher (27.7%) use than those in the 18 to 24 year old groups (22.6%) use of alcohol. A possible explanation could be that not all respondents in the 18 to 24 year old group are within drinking age or may have limited access. Although 41.4% deny or report rarely drinking in the survey.

For the purpose of this study the mean risk summary score was 51.78 ($N = 932$; $SD = 11.9$; $min = 20$; $max = 93$). One SD above the mean = 63.68 was utilized to identify relationships with the perceived susceptibility questions created from the Health Belief Model. The Health Belief Questionnaire consisted of eighteen questions; only the first five were utilized to determine significance pertaining to perceived susceptibility. Spearman Rho Correlation Coefficient was utilized to assess the relationship between the risk taking group and the five perceived susceptibility questions. The question of most significance was related to Q 3, “helmets are unnecessary if you are experienced in the recreational activity” with many small and medium correlations and one large correlation.

Relationship to Literature

The literature identifies that the young adult population is at higher risk for sustaining a traumatic brain injury. That premise is supported by results found in this study. Overall, the high risk taking group felt that helmets are unnecessary if they are experienced in that recreational activity. Prior studies have shown the majority of undergraduates would wear helmets if mandated by law, but only 12% actually did (Ross et al, 2010). Ross et al. supports the findings of this study in regards to a high risk taking participant. The findings of this study are specific to the high risk taking group, but when taking the overall number of undergraduates ($n = 755$), 90%

($n = 680$) who answered “no” to this question, felt helmets are necessary when you are experienced in the recreational activity. This mentality can lead to a TBI if helmets are not utilized. The CDC (2015) identified that 15 to 19 year olds are among the highest population of sustaining a TBI. Chino et al. (2010) also noted that Nevadans specifically 15 to 24 years old have the highest rates of hospitalizations for TBIs.

The literature states that in the state of Nevada, males account for 79.8% of deaths related to TBI (Chino et al., 2010). This research can support those findings in the sense that males are aware their actions put them at risk for a TBI, but may not take the proper precautions to prevent a TBI. Possible reasons for this behavior were not analyzed for the purpose of this study. These numbers are also significant in that males only made up 24.1% of the 932 respondents are significant to the high risk taking group.

Limitations

The results of this study are limited and must be interpreted cautiously in consideration of the sample. First, this study uses a convenience sample of one university within the western U.S. Convenience samples are subject to bias due to the self-selection of subjects. Those students who participated are not representative of the average student body population in the U.S. Behaviors and characteristics were specific for this population and not representative of this age population in rural or large metropolitan areas. Only 4.77% of the entire surveyed population participated. Out of those 932 responses, 157 were analyzed to find significance relating to perceived susceptibility. Only small positive correlations were found. If there had been a greater sample, the significance may have been more defined, thus limiting any generalizability of these findings.

Discussion

Kim, Ahn and No (2012), were able to tailor their study to the Health Belief Model to analyze the five components of the model. The survey for this paper addressed all five components of the HBM, but the participant’s perceived susceptibility was specifically analyzed.

There was a small positive correlation seen that as the risk taking score increases, male participants acknowledge they participate in risk taking activities that put them at risk for a TBI. A small positive correlation was also seen in relation to Q 3, “helmets are unnecessary if you are experienced in the recreational” with 18 to 24 year olds, males, and undergraduate students. It also showed a small positive relationship in relation to helmets are unnecessary if you are experienced at the recreational activity and the identified high risk taking group.

Although the findings are small, they do support the current literature that 18 to 24 year olds are increased risk takers and are at risk for sustaining a traumatic brain injury. There was no significance noted in the perceived susceptibility questions in the over 25 years of age group. This could be due to low participation; further research with a larger sample size is needed to assess if there is truly significance. It is difficult to conclude based on small positive correlations that the higher the risk taker, the less the perceived susceptibility. This study only showed significance in two out of the five perceived susceptibility questions. This could be limited to the low number of participants; further research should be conducted with a larger sample size.

In regards to characteristics of the risk taker, only one person in the entire study scored a 90 to 99 on the risk taking questionnaire and was identified in the 18 to 24 year old group. Although this finding is insignificant, it does give the author insight into the characteristics of the highest risk taker amongst the participants. These findings are consistent with study results described by Skeel et al (2007) in that there were no relationships between personality traits and rebelliousness risk taking. This study did not find significance between personality characteristics and an increase in risk taking behavior. Small to medium positive correlations were found in relation to age, degree, gender and their perceived susceptibility of sustaining a traumatic brain injury.

Implications for Nursing Practice

The findings from this study offer various implications for nursing. First, the results of this study found indications for prevention education. Bicycling was identified as the most frequent recreational activity for both age groups. Notably, 40% to 44.2% of the respondents answered that they are not at risk for a TBI related to their recreational activity, when in reality all of the activities listed are causative for TBI. There is a lack of knowledge among these respondents related to activities that can place an individual at risk for TBI. For nursing educators this has a strong implication for the development of trauma prevention education.

This study identified that male, undergraduates, and those who identify as increased risk takers do not perceive themselves to be susceptible to a traumatic brain injury. Correlation was found between the high risk taking group stating “No” that they are not at risk for a TBI and “helmets are unnecessary if you are experienced in the recreational activity”. Although small, this correlation shows significance that those who do not think they are susceptible for sustaining a TBI would not wear helmets if they are experienced in a recreational activity.

Kim, Ahn and No (2012) proposed that if the participant felt a true susceptibility to injury that could influence behavior. Of the total 932 participants, 94.53% stated they knew what a TBI was. If they understand what it is, but still aren't taking the necessary precautions, it could imply that further education and clarification of what a TBI is would be beneficial to this population. Additional deficits of knowledge were identified when analyzing questions “My Primary Care Physician (PCP) has encouraged me to wear a helmet” and “my faculty have encouraged me to wear a helmet”. Of the respondents for the 18 to 24 year old age group, 65% stated their PCP had not recommended a helmet. Approximately 72% of the respondents for age 18 to 24 stated their faculty had not encouraged use of a helmet.

As a Nurse Educator, these numbers are indicative of further educational needs in trauma prevention. In order to address knowledge deficits within this age group, an educational program

needs to be created to meet the needs of this population. When working with this age group and risk taking group, it is important to keep in mind incentives for them to wear helmets and prevent TBIs. To start, although the participants have stated they know what a TBI is, they may not fully understand the severity of a TBI. Further analysis of the perceived severity questions utilized in this study provides considerations for future educational focus. These questions were tailored towards sustaining a TBI and the effect it may have on one's social life, family, finances, and functions at school and work. Finding out what this population values and how a TBI can effect those values is vital to increase their perceived seriousness to sustaining a TBI. Educational material can be tailored to these values in order to maximize the understanding of traumatic brain injuries. This information could be included in the student orientation packet.

As an Advanced Practice Registered Nurse (APRN), the results of this study indicate a need to provide education, however brief during each office encounter. APRNs can use the results of this study to properly advocate for the safety of their patients. The research from this study has identified an age group, behaviors, recreational activities and gender that place an individual at increased risk for sustaining a TBI. Admission physicals and screenings should include safety recommendations, such as the use of a helmet. There would essentially be no increase in time of these assessments and screenings to hand a patient with these characteristics a flyer describing the benefits of wearing a helmet when participating in risk taking behaviors.

Recommendation for Future Research

It is the hope of this researcher that the findings of this study will stimulate conversation among nurse researchers, nurse educators, primary and acute care providers and staff nurses with a desire to replicate or expand upon the current work. Future research could be focused around a test, retest with an educational intervention for students of this age. Further analysis from the Health Belief Model questions utilized in this study may be beneficial in creating this test, retest

and educational intervention. As discussed earlier, identifying the perceived seriousness to injury could also identify a knowledge gap regarding the effects of a TBI.

Conclusion

The purpose of this study was to identify the personality characteristics of the risk taking individual and evaluate their perceived susceptibility of sustaining a traumatic brain injury while participating in risk taking behavior. No significance was found in relation to personality traits of risk taking behavior. Driving over the speed limit was identified as the most frequent risk taking behavior amongst 18 to 24 year olds. A small positive correlation was identified among the two perceived susceptibility question; “helmets are unnecessary if you are experienced in the recreational activity” in relation to age, gender, degree and overall perception of sustaining a traumatic brain injury. Also, “I participate in recreational activities that put me at risk for traumatic brain injury” showed a small correlation in relation to males identified in the high risk taking group. Reasons for these findings were identified and discussed. It can be concluded that the greater the risk taker, the perception that helmets are not needed if they are experienced in the recreational activity is increased. This mentality of thinking can lead to TBIs. These participants also felt they were not at risk of sustaining a traumatic brain injury. As a Nurse Educator, it would be appropriate for an educational program to be created and conducted through the admission process of the University. Opportunity was identified for Nurse Educators and Advance Practice Registered Nurses to promote use of helmets during screenings and physical assessments. Additional research is needed to identify which personality traits predispose those to TBI. Knowledge obtained from the results of this study can help decrease the occurrence of traumatic brain injuries in our community and state. Awareness of the risk of sustaining a traumatic brain injury is key in the prevention of TBIs.

APPENDIX A

Demographics

1. Please indicate your current age.
 - a. 18 years of age
 - b. 18 to 24 years of age
 - c. 25 years of age or older

2. I am currently enrolled as a (an)
 - a. Undergraduate Student
 - b. Master's Student
 - c. Doctoral Student

3. I am
 - a. Male
 - b. b. Female
 - c. c. Transgender

4. My ethnicity is
 - a. White or Caucasian
 - b. African American or Black
 - c. Hispanic or Latino
 - d. Native American or American Indian
 - e. Asian or Pacific Islander
 - f. Other

5. I know what a traumatic brain injury is.
 - a. Yes
 - b. No

APPENDIX B

Knowles Risk Taking Questionnaire

Below are 20 different statements. I would like to know personal opinion of each of these statements. Please rate how much you agree or disagree with each of the statements. In this questionnaire ratings are opposite of what would normally expected, 1 = Strongly Agree and 5 = Strongly Disagree. Please use the scale to rate each of the 20 statements.

	Strongly Agree	Somewhat Agree	Neutral	Mildly Disagree	Strongly Disagree
1. It's always best to plan before doing.	1	2	3	4	5
2. I'm not very cautious.	1	2	3	4	5
3. I enjoy being with people who take risks.	1	2	3	4	5
4. I enjoy doing things when I know what will happen.	1	2	3	4	5
5. Being a little reckless is good for you.	1	2	3	4	5
6. I'm the kind of person who avoids risks.	1	2	3	4	5
7. I don't think it's a good idea to hitchhike.	1	2	3	4	5
8. I'd rather not ride with someone who speeds.	1	2	3	4	5
9. In most situations it's better not to take a chance.	1	2	3	4	5
10. I'd rather not gamble if there is a better way to do things.	1	2	3	4	5
11. I'm the kind of person who enjoys taking risks.	1	2	3	4	5
12. For most things, it is probably better to know exactly where you are going.	1	2	3	4	5
13. I avoid situations that are likely to be dangerous.	1	2	3	4	5
14. I tend to like people with a wild streak.	1	2	3	4	5
15. I sometimes take a risk just for the excitement.	1	2	3	4	5
16. I'm pretty cautious about what I do.	1	2	3	4	5

17. I'd rather take a risk than do nothing at all.
1 2 3 4 5
18. It is better to be safe than sorry.
1 2 3 4 5
19. There is an excitement in breaking the rules.
1 2 3 4 5
20. I enjoy getting into situations that I don't know if I can get out of.
1 2 3 4 5

APPENDIX C

Risk Taking Behavior

	Never	Rarely	Occasionally	Often	Frequently
1. I gamble	1	2	3	4	5
2. I drink alcohol	1	2	3	4	5
3. I smoke cigarettes	1	2	3	4	5
4. I engage in illegal drug use	1	2	3	4	5
5. I drive over the speed limit	1	2	3	4	5
6. I participate in high impact sports activities	1	2	3	4	5

APPENDIX D

Five Factor Personality Traits

Please look at the terms in each line and circle the number that is closest to what you believe to be your personality trait:

- | | | | | | | |
|-----------------|---|---|---|---|---|--------------|
| 1. Timid | 1 | 2 | 3 | 4 | 5 | Assertive |
| 2. Shy | 1 | 2 | 3 | 4 | 5 | Outgoing |
| 3. Trusting | 1 | 2 | 3 | 4 | 5 | Suspicious |
| 4. Compliant | 1 | 2 | 3 | 4 | 5 | Opposing |
| 5. Competence | 1 | 2 | 3 | 4 | 5 | Helplessness |
| 6. Stable | 1 | 2 | 3 | 4 | 5 | Spontaneous |
| 7. Anxious | 1 | 2 | 3 | 4 | 5 | Calm |
| 8. Angry | 1 | 2 | 3 | 4 | 5 | Happy |
| 9. Fantasy | 1 | 2 | 3 | 4 | 5 | Reality |
| 10. Variability | 1 | 2 | 3 | 4 | 5 | Routine |

APPENDIX E

Health Belief Questionnaire

Please check all the recreational activities you participate in:

- Skateboarding
- Bicycling
- Long Boarding
- Snow Skiing
- Snowboarding
- Riding an ATV

Please refer to the checked recreational activities listed above when answering the following questions.

Please indicate Yes or No to each question.

1. I participate in recreational activities that put me at risk for traumatic brain injury.

Yes No

2. Wearing a helmet is important to me while participating in recreational activities.

Yes No

3. Helmets are unnecessary if you are experienced in the recreational activity.

Yes No

4. Helmets are unnecessary when riding short distances.

Yes No

5. Recreational Activities can be dangerous.

Yes No

6. If I injured my head while participating in recreational activities, it could

- a. Seriously affect my social life with my friends.

Yes No

- b. Seriously affect my relationships with my family members.

Yes No

c. Seriously affect my ability to function at school.

Yes No

d. Seriously affect my ability to function at work.

Yes No

7. Wearing a helmet makes me feel safe.

Yes No

8. Wearing a helmet makes me feel silly, or embarrassed.

Yes No

9. I think it is my obligation to keep myself safe for the people who care about me.

Yes No

10. In general, I think people who choose to wear helmets are being safe and responsible.

Yes No

11. In the event of an accident, wearing a helmet could save me money by avoiding expensive medical treatment.

Yes No

12. I feel embarrassed wearing a helmet.

Yes No

13. Wearing a helmet is uncomfortable.

Yes No

14. The cost of helmets are generally more than they are worth.

Yes No

15. The cost of buying a helmet would affect whether I wore one or not.

Yes No

16. I have seen advertisements promoting helmet use.

Yes No

17. My Primary Care Physician has encouraged me to wear a helmet.

Yes No N/A

18. My faculty have encouraged me to wear a helmet.

Yes No

Appendix F

Letter to the Student

Dear University Student,

My name is Amanda Stallings and I am currently a graduate student at the University of Nevada, Reno (UNR), pursuing a Master's of Science in Nursing degree in the Nurse Educator track. My thesis topic is the perceived susceptibility of young adults sustaining a traumatic brain injury while participating in risk taking behavior and I would greatly appreciate your participation in my research study. Enclosed you will find a link to SurveyMonkey that will include a demographic questionnaire and 5 additional sections with a total of 49 questions. The total time to complete the questionnaire and the survey is approximately 15 minutes. If you choose to participate in the study, please answer the survey questions based on your experience within the last **30 days**. I ask all participants to complete the survey online via SurveyMonkey, a completely confidential and anonymous survey tool to ensure the participants' rights are protected. You may access the survey from any computer, but please make sure to follow the logout procedure at the completion of the survey to protect your anonymity and confidentiality.

Participation in this study is completely voluntary. There are no consequences if you choose to refuse to participate in this study, or discontinue participation at any time. If you feel uncomfortable while answering any of the survey questions you may take a break and come back later, choose to not answer a question, or stop the process altogether.

By completing these questionnaires via SurveyMonkey, you are consenting to participate in this research study. The data and information provided from the survey and questionnaire will be used in my thesis, but I assure you that you will not be identified individually in any way, and no other attempts will be made to contact you.

For any questions or concerns regarding this project or your rights as a participant you can contact me any time via email at astallings@nevada.unr.edu. You may also contact my thesis chair Dr. Stephanie DeBoor at (775) 682-7156, or the UNR Institutional Review Board at (775) 327-2364.

Thank you in advance for your consideration in participation of this study.
Sincerely,

Amanda Stallings RN, BSN

The survey website is <https://www.surveymonkey.com/r/astalltbi>

References

- Casey, B. J., Jones, R. M., & Hare, T. A. (2008). The adolescent brain. *Annals of the New York Academy of Sciences, 1124*, 111-126.
- Center for Disease Control and Prevention. (2015). Facts about traumatic brain injury.
Retrieved from
<http://www.brainline.org/content/2008/07/facts-about-traumatic-brain-injury.html>
- Center for Disease Control and Prevention. (2014). Severe traumatic brain injury.
Retrieved from <http://www.cdc.gov/TraumaticBrainInjury/severe.html>
- Center for Disease Control and Prevention. (2012). Traumatic injury. Retrieved from
<http://www.cdc.gov/niosh/programs/ti/>
- Chino, M., La Valley, J., Haff, D., Harris, D.A., & Rivers, A.R. (2010). Injury in Nevada:
UNLV, School of Community Health Sciences, Nevada State Health Division, Bureau of
Child Family and Community Wellness. Chapter 11: Traumatic brain injury. Retrieved
from
http://digitalscholarship.unlv.edu/community_health_sciences_fac_articles/206
- DMV. org. (2016). How age affects auto insurance rates. Retrieved from
<http://www.dmv.org/insurance/how-age-affects-auto-insurance-rates.php>
- Gullone, E., & Moore, S. (2000). Adolescent risk-taking and the five-factor model of
personality. *Journal of Adolescence 23*, 393-407. doi: 10.1006/jado.2000.0327
- Harrison, J. E., Berry, J. G., & Jamieson, L. M. (2012). Head and traumatic brain injuries among
Australian youth and young adults. *Brain injury, 26(7-8)*, 996-1004.
- Kim, H., Ahn, J., & No, J. (2012). Applying the health belief model to college students' health
behavior. *Nutrition Research and Practice, 6(6)*, 551-558.
doi:10.4162/nrp.2012.6.6.551

- Kimbler, D. E., Murphy, M., & Dhandapani, K. M. (2011). Concussion and the adolescent adult. *Journal of Neuroscience Nursing, 43*(6), 286-290. doi: 10.1097/JNN.0bo13e31823858a6
- Knowles, E. (1976). Searching for motivations in risk-taking and gambling. In W. R. Eadington (Ed.), *Gambling and society: Interdisciplinary studies on the subject of Gambling* (pp. 295-322). Springfield, IL: Charles C. Thomas.
- McCrae, R. R., & John, O. P. (1991). An introduction to the Five-Factor Model and its applications. Retrieved from <http://www.workplacebullying.org/multi/pdf/5factor-theory.pdf>
- Merriam-Webster. (2015). Full definition of ageism. Retrieved from <http://www.merriam-webster.com/dictionary/ageism>
- National Trauma Institute. (2014). Trauma statistics. Retrieved from http://www.nationaltraumainstitute.org/home/trauma_statistics.html
- NevadaToday. (2014). University of Nevada, Reno welcomes largest student population ever. Retrieved from <http://www.unr.edu/nevada-today/news/2014/fall-2014-enrollment>
- Pallant, J. (2010). Choosing the right statistic. In J. Pallant (Ed.). *SPSS survival manual* (4th ed., pp. 103, 113, 125, 127-128, 132-135). New York, NY: McGraw-Hill.
- Polit, D. F., & Beck, C. T. (2012). Specific types of quantitative research. In D. F. Polit & C.T. Beck (Ed.), *Nursing research: Generating and assessing evidence for nursing practice* (9th ed.) (pp. 257-272). New York: Lippincott Williams & Wilkins.
- Popham, L. E., Kennison, S. M., & Bradley, K. I. (2011). Ageism, sensation-seeking and risk-taking behavior in young adults. *Current Psychology, 30*(2), 184-193. doi: 10.1007/s12144-011-9107-0
- Rosenstock, I. M. (1974). Historical origins of the health belief model. *Health Education Monographs, 2*(4), 328-335.

- Rosenstock, I. M., Strecher, V. J., & Becker, M. H. (1988). Social learning theory and the health belief model. *Health Education Quarterly*, *15*(2), 175-183. doi: 10.1177/109019818801500203.
- Ross, T., Thomas-Ross, L., Rahman, A., & Cataldo, S. (2010). The bicycle helmet attitude scale: Using the health belief model to predict helmet use among undergraduate. *Journal of American College Health*, *59*(1), 29-36. doi: 10.1080/07448481.2010.483702
- Skeel, R., Neudecker, J., Pilarski, C., & Pytlak, K. (2007). The utility of personality variables and behaviorally-based measures in the prediction of behavior. *Personality and Individual Differences*, *43*, 203-214. doi:10.1016/j.paid.2006.11.025
- Ulleberg, P. & Rundmo, T. (2003). Personality, attitudes and risk perception as predictors of risky driving behavior among young drivers. *Safety Science*, *41*(5), 427-443. doi:10.1016/S0925-7535(01)00077-7
- Van der Plight, J. (1998). Perceived risk and vulnerability as predictors of precautionary behavior. *British Journal of Health Psychology*, *3*, 1-14.