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Concussion Knowledge And Attitudes: The Impact Of Hegemonic Masculinity

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CONCUSSION KNOWLEDGE AND ATTITUDES: THE IMPACT OF HEGEMONIC
MASCULINITY

by

Allyssa Jean Schlosser
Bachelor of Arts, University of North Dakota, 2011

A Thesis

Submitted to the Graduate Faculty

of the

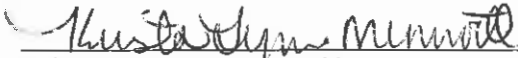
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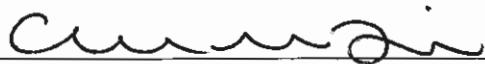
This thesis, submitted by Allyssa Jean Schlosser in partial fulfillment of the requirements of the Degree of Master of Arts from the University of North Dakota, has been read by the faculty advisory committee under whom the work has been done, and is hereby approved.



Krista Lynn Minnotte, Chairperson

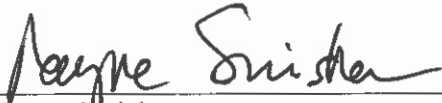


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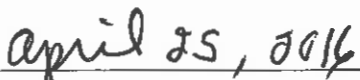


Elizabeth Legerski

This thesis is being submitted by the appointed advisory committee as having met all of the requirements of the graduate school at the University of North Dakota and is hereby approved.



Wayne Swisher
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Date

PERMISSION

Title Concussion Knowledge and Attitudes: The Impact of Hegemonic
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Allyssa Jean Schlosser
April 8, 2016

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ABSTRACT

Concussions are a significant public health issue, however, there is a lack of knowledge about concussions and a minimization of their severity in society. Prior research has identified various social stigmas, particularly in the world of contact sports, as deterrents for men reporting concussions. This study expands on the reasons why men do not report concussions by exploring the relationship between adherence to hegemonic masculinity and the knowledge and attitudes men have about concussions. College men ($N=126$) responded to survey questions related to concussion knowledge, concussion attitudes, adherence to toughness, and adherence to restrictive emotionality. Regression analyses were performed to test the relationships between the variables. Results suggest that higher adherence to toughness and restrictive emotionality are associated with attitudes that concussions are not serious. Implications and suggestions for future research are discussed.

CHAPTER I

INTRODUCTION

Overview of Chapter

This thesis examines the relationships between hegemonic masculinity and concussion knowledge and attitudes. In this chapter, concussions are defined and identified as a societal concern. The prevalence and symptoms of concussions are described, as well as long term consequences from multiple head injuries. The frequency of concussions in the sport of football, underreporting of concussions, and general knowledge and attitudes about concussions are outlined. Based on men's health research, and the encouragement for men to demonstrate hegemonic masculinity through the culture of football, this study suggests masculine norms influence knowledge and attitudes about concussion.

Background of the Concussion Problem

Concussions are a significant public health issue (Baugh et al. 2012; Kroshus et al. 2014; McCrea et al. 2004), and concerns about severely negative health outcomes from sustaining a concussion have been documented for several decades (Baugh et al. 2012; Montenigro et al. 2015). Concussion, a form of mild traumatic brain injury, is defined as “a traumatically induced alteration in mental status that may or may not be accompanied by a loss of consciousness” (Collins et al. 2002:1176). In 2010, the Centers

for Disease Prevention and Control (CDC) found concussions have an annual incidence in the United States of 1.6 – 3.8 million. Despite these statistics, there is a lack of awareness about the long term effects of concussions (McAllister et al. 2012; Miller et al. 2007), which contributes to the underreporting of concussions. Indeed, many people experience concussions and do not report them. This occurs due to lack of knowing what a concussion is and inconsistencies in how people experience symptoms, such that immediate symptoms may not be experienced, or immediately experienced symptoms dissipate quickly (Delaney et al. 2002; Iverson et al. 2004; McCrea et al. 2004; Miller et al. 2007; Rabinowitz, Li, and Levin 2014). Inconsistent definitions also contribute to the lack of understanding of how to properly identify a concussion or related symptoms (Guskiewicz et al. 2003). As a result, many concussions go unreported (McCrea et al. 2004; Miller et al. 2007).

Underreporting of concussions is a concern for all members of society, particularly men. Men are 1.5 times more likely to sustain a head injury, and nearly three times more likely to die from head injuries, compared to women (CDC 2010). Furthermore, the male-dominated sport of football has the highest incidence of concussions among all contact sports, accounting for more than half of all events (Daneshvar et al. 2011; Kroshus et al. 2014). Therefore, men's underreporting of concussions is a major concern, especially for those involved in contact sports.

Studies of high school football players found that players did not report concussions because they did not want to leave the game, did not know they experienced a concussion, or feared disappointing teammates (McCrea et al. 2004; Taylor and Sanner 2015). Similar to the findings about high school football players, collegiate level players

have shown similar reasons for reluctance to report, even when they suspect a concussion has been sustained (Llewellyn et al. 2014). The competitive nature of contact sports not only encourages players to stay in the game when injured, but also reinforces the effort of players to compete for masculine success through field performance and physical fitness (Steinfeldt et al. 2011). Encouragement to demonstrate this hegemonic, or “dominant” masculinity, particularly in the culture of football, begins at a very young age (Connell and Messerschmidt 2005; Evans et al. 2011; McCrea et al. 2004). This suggests adherence to gender norms may be an important variable shaping the knowledge and attitudes men have about concussions, which ultimately influences whether they will act preventatively and seek treatment for concussions.

The goal of this study is to demonstrate the importance of hegemonic masculinity to knowledge and attitudes about concussions. Due to the prevalence and potentially catastrophic impact of concussions, men should be encouraged to seek help when they become injured. As a society, we should be concerned that men minimize the occurrence of concussions, believing such injuries are not severe, or lack the proper knowledge to identify concussion symptoms. Although there is a vast body of research on masculinity and mental and physical health, there is limited research on masculinity as it relates to knowledge and attitudes about concussions.

Summary and Organization of Next Chapter

The next chapter provides a theoretical framework to support the objective of this study, which is to examine the relationships between adherence to hegemonic masculinity and concussion knowledge and attitudes. A detailed overview of the problem of

concussions and issues of underreporting will be given. Literature about concussion knowledge and attitudes will be used to explain why concussions are not reported, particularly in football players. Prior research highlighting the encouragement for men to adhere to hegemonic masculinity through football participation will be provided.

CHAPTER II

LITERATURE REVIEW

Overview of Chapter

This chapter begins by presenting a theoretical framework focusing on the concepts of “doing gender” and “hegemonic masculinity”. These concepts, in addition to research on masculinity and health, explain why men do not report concussions. Then, concussion literature will provide a context for the lack of serious consideration and knowledge people have about concussions, particularly football players, who are most at risk. Hypotheses informed by the theoretical perspective and literature are then proposed.

Theoretical Background

The “doing gender” perspective focuses on the “behavioral aspects of being a woman or a man” (West and Zimmerman 1987:127). “Doing gender” dictates how men and women act individually to demonstrate competence through their gender performances, informed by larger social norms and constraints. The presumption is that gender is an *expression*, socially constructed through everyday interactions with other people that must be sustained (West and Zimmerman 1987:129). Men and women are held socially accountable for sustaining their gender performances, as behaviors can undermine gender displays if performed inappropriately (West and Zimmerman 1987).

When gender inappropriate behavior occurs, such gender norm violations can potentially lead to questions about gender competence. To avoid being undermined, men intentionally engage in risk taking behavior and avoid behaving in ways that would result in them being labeled as “weak” or “soft” (Connell and Messerschmidt 2005; Courtenay 2000; Fleming, Lee, and Dworkin 2014; Levant and Wimer 2014; Morioka 2014; Reed 2013; Steinfeldt et al. 2011). This behavior occurs at the “risk of gender assessment” (West and Zimmerman 1987:136). Not only do men behave in such ways to sustain their gender performances and avoid being undermined, they behave in ways that create greater competition with other men. Men attempt to achieve the “best”, most competent display of masculinity, known as hegemonic or “dominant” masculinity.

Hegemonic masculinity is defined as the most valued performance of masculinity in a society (Connell and Messerschmidt 2005). There are several characteristics that contribute to the socially defined success of performing masculinity, however, not all men are able to perform to the same degree, or with the same resources. For example, income, occupational status, and educational attainment are factored into determining the extent to which a man has achieved hegemonic masculinity. Resources and status contribute to the social hierarchy, which places some men higher than others based on how well they can demonstrate their masculine competence within a cultural context (Evans et al. 2011). A good example of this is racial stratification in the United States. White men are valued more in society simply because of their skin color, and this limits how successful minority men can be in achieving hegemonic masculinity.

Although many factors contribute to the ability to successfully achieve hegemonic masculinity, characteristics of physical and mental tolerance often allow men to enact

hegemonic masculinity to a greater degree, such as through displays of self-reliance and physical dominance (Levant et al. 2009). In the context of contact sports, hegemonic masculinity comes in the combination of restricted emotionality and toughness (Anderson and Kian 2012; Levant et al. 2009; Steinfeldt et al. 2011). Based on the concept of hegemonic masculinity, this study suggests men will not only hold beliefs about tolerance of pain and injury, but also beliefs about withholding emotions related to pain and injury. These beliefs may impede reporting of concussions.

Masculinity and Concussions

This study argues that social pressures faced by men regarding mental and physical health are also true when men sustain concussions, which can result in severe mental and physical health issues. Research demonstrating that gender is a significant predictor of health supports this claim (Evans et al. 2011; Levant and Wimer 2014; Mahalik, Burns, and Syzdek 2007). For example, throughout the world men have poorer health and a greater incidence of disease compared to women (Evans et al. 2011; Levant et al. 2009; Mahalik et al. 2007; Reed 2013). In addition, men are more likely to sustain and die from head injuries compared to women (CDC 2010).

Not only do men have poorer health and a greater risk of head injury than women, but they are less likely to ask for or seek health care services compared to women, including mental health, physical health, and injuries (Courtenay 2000; Evans et al. 2011; Levant et al. 2009; Levant and Wimer 2014; Mahalik et al. 2007; Reed 2013). Men often do not seek help for health issues because doing so may detract from appearing tough, self-reliant, and pain tolerant (Courtenay 2000; Crawshaw 2007; Evans et al. 2011; Fleming et al. 2014; Levant and Wimer 2014; Morioka 2014; Reed 2013; Steinfeldt et al.

2011). Norms encouraging men to be “tough” and “be a man” occur at a very young age, which reinforces risk taking behaviors (Connell and Messerschmidt 2005; Courtenay 2000; Evans et al. 2011; Fleming et al. 2014; Levant et al. 2009; Levant and Wimer 2014; Mahalik et al. 2007). Pressure to take risks and be tough is especially evident in the competitive culture of contact sports (Connell and Messerschmidt 2005; Evans et al. 2011; Levant et al. 2009). Research findings demonstrate the pressure men experience to meet the requirements of masculinity in addition to highlighting the social expectation that men’s bodies should be stronger than women’s bodies (Courtenay 2000; Reed 2013; Steinfeldt et al. 2011). Adherence to hegemonic masculinity not only influences the behaviors of men, but likely plays a role in the lack of understanding and acknowledgement that concussions are a serious health condition.

Past studies explain why it can be difficult to identify and report concussions (Delaney et al. 2002; King et al. 2014; Kroshus et al. 2014; McCrea et al. 2004; Register-Mihalik et al. 2013). However, little research has been done to connect underreporting of concussions with the enactment of hegemonic masculinity. Because men have a greater likelihood of sustaining an injury to the head compared to women (CDC 2010), it is important to draw attention to the social implications men face when they become distressed, ill, or sustain a concussion. This study contributes to this literature by explaining how aspects of hegemonic masculinity can influence knowledge and attitudes about concussions.

Concussions

Injuries to the brain and resulting impairments have been documented for decades (Baugh et al. 2012; Dupuis et al. 2000; Montenigro et al. 2015). Concussion, a form of

mild traumatic brain injury, is defined as “a traumatically induced alteration in mental status that may or may not be accompanied by a loss of consciousness” (Collins et al. 2002:1176). The Centers for Disease Prevention and Control (CDC 2010) estimates an annual concussion incidence of 1.6 – 3.8 million in the United States, with the sport of football having the highest occurrence (Daneshvar et al. 2011; Kroshus et al. 2014), accounting for more than half of all concussive events (Cournoyer and Tripp 2014). Although concussions are often conceptualized as “mild”, it is important to understand the severity of concussion impairments.

Initial symptoms of concussion may include, but are not limited to, loss of consciousness, headache, dizziness, vomiting, nausea, fatigue, sensitivity to light, blurred vision, and confusion (Delaney et al. 2002; Guskiewicz et al. 2003; Iverson et al. 2004; Miller et al. 2007). Some symptoms do not present until several hours after head impact, especially in cases that lack a loss of consciousness (Guskiewicz et al. 2003). In fact, many head impacts can be catastrophic, even if manifestation of typical concussion symptoms is absent (Baugh et al. 2012; Delaney et al. 2002; Guskiewicz et al. 2005; King et al. 2014; Montenegro et al. 2015; Stein, Alvarez, and McKee 2014). Miller and colleagues (2007) found loss of consciousness, a commonly identified concussion symptom, to be apparent in only about 10% of all sports related injuries. Emotional and cognitive symptoms, which can manifest hours, days, or weeks following a concussion, are often overlooked and include slow information processing, sleep disruptions, and mood changes, such as irritability, sadness, and anxiety (King et al. 2014). Single concussions have a high potential for negative impacts, but repetitive head injuries are

even more detrimental. Indeed, those who experience multiple head injuries are at greater risk for sustaining future injuries with more severe outcomes (Iverson et al. 2004).

If not identified and treated quickly, the likelihood of sustaining another, more serious injury, increases greatly (Iverson et al. 2004; King et al. 2014; Register-Mihalik et al. 2013). A potential outcome of multiple head injuries is a disease called Chronic Traumatic Encephalopathy, commonly referred to as CTE. CTE is a neurodegenerative disease thought to be caused, at least in part, by repetitive brain trauma that can occur during contact sports and military participation (Baugh et al. 2012; Montenigro et al. 2015; Stein et al. 2014). CTE manifests similarly to and increases the risk of acquiring other degenerative diseases, such as Alzheimer's Disease and Parkinson's Disease, and can lead to severe mental health problems, including depression, personality changes, and violent and angry behavior (Baugh et al. 2012; Dupuis et al. 2000; Guskiewicz et al. 2005; King et al. 2014; Kroshus et al. 2015; Montenigro et al. 2015; Stein et al. 2014). Multiple head injuries, which commonly occur in contact sports, like football, are the leading risk factor in acquiring CTE (Montenigro et al. 2015).

Because CTE can have severely damaging impacts, the National Football League (NFL) has received media and public pressure to address safety issues and encourage proper treatment of head injuries due to the frequent rough play that occurs in football. Professional football players have expressed concern as a result of research on concussions, which has demonstrated the link between brain damage and participation in football (Hull and Schmittl 2015). Concerns have become even more profound, as the brains of several deceased professional football players were examined to further understand the impacts of concussion. CTE was found in nearly all cases, with all cases

of CTE having a history of reported concussion (Baugh et al. 2012; Montenigro et al. 2015; Stein et al. 2014).

These patterns highlight the importance of concussion prevention and treatment. However, identifying and treating concussions is a challenge for the general public, health and medical professionals, coaches, teachers, and parents, due to the lack of awareness and inconsistent concussion guidelines (Cournoyer and Tripp 2014; King et al. 2014; Kroshus et al. 2014; McKinlay et al. 2011; Register-Mihalik et al. 2013). Reinforcement of hegemonic masculinity through participation in football adds to these issues surrounding concussions, particularly among men because football is a male-dominated sport. Research on masculinity and health has demonstrated that men who adhere to masculinity do not seek health information and services due to a false confidence in their knowledge and ability to self-manage conditions (Courtenay 2000; Evans et al. 2011; Fleming, Lee, and Dworkin 2014; Levant et al. 2009; Levant and Wimer 2014; Mahalik et al. 2007; McCrea et al. 2004; Morioka, 2014; Reed 2013). Therefore, this study suggests that concussion knowledge and attitudes of men are shaped by the level of adherence to hegemonic masculinity.

Concussion Knowledge

Hundreds of thousands of sports concussions are sustained annually (CDC 2010; Cournoyer and Tripp 2014; Daneshvar et al. 2011; Dupuis et al. 2000; Guskiuewicz et al. 2003; Kroshus et al. 2014). Such high rates of occurrence create a public duty to know how to correctly identify a concussion. Concussion knowledge is defined in this study as *the amount of accurate knowledge an individual has about concussions*. Education about concussions is imperative for those engaged in assessment, especially sideline

assessment, because most of these injury assessments involve competitive pressure, and are rushed due to time constraints (King et al. 2014). Enormous efforts have been made to establish legislation related to education and awareness of concussions (Hull and Schmittl 2015; King et al. 2014; Kroshus et al. 2014). However, much of the general public is not adequately informed about the manifestation or seriousness of concussions (McKinlay, Bishop, and McLellan 2011). There is also a lack of knowledge about the condition among parents, coaches, medical professionals, and athletes despite the high rate of concussion occurrence in contact sports, like football (King et al. 2014; Kroshus et al. 2015; McAllister et al. 2012; Miller et al. 2007).

Although some parents claim to have discussed concussions with their children, both parties in many instances are still unable to identify symptoms (Cournoyer and Tripp 2014). Further, King and colleagues (2014) found that many medical professionals clear players for return to play too soon after concussions occur. Prior research about the concussion knowledge of athletes has found that athletes who report an understanding and awareness of concussion symptoms, often are still unable to correctly identify a concussion (Cournoyer and Tripp 2014; Delaney et al. 2002; McCrea et al. 2004). Of players that are able to identify when they have sustained a concussion, a majority do not view the injury as severe enough to report (McCrea et al. 2004). Underreporting in many cases has been shown to be due to lack of understanding of what a concussion is, how severe it can be, how immediately symptoms occur, or how quickly initial symptoms dissipate (Delaney et al. 2002; Iverson et al. 2004; McCrea et al. 2004; Miller et al. 2007; Rabinowitz et al. 2014). Others have found a similar trend in the awareness players have of head injuries (King et al. 2014; Register-Mihalik et al. 2013). This lack of

understanding about concussions is partly due to the fact that no single definition for a concussion exists (Guskiuewicz et al. 2003; King et al. 2014; McKinlay et al. 2011; Register-Mihalik et al. 2013). Concussions are often referred to as the “silent” or “invisible” injury for this reason (CDC 2010; King et al. 2014).

Education is one aspect of being able to appropriately identify the occurrence of a concussion. Social expectations may also be a factor. Masculine norms have been shown to discourage men from educating themselves about health conditions. Therefore, this thesis expects a high level of adherence to hegemonic masculinity will be related to low levels of knowledge about concussions.

H: The level of adherence to aspects of hegemonic masculinity will be negatively related to the amount of knowledge men have about concussions.

Concussion Attitudes

This study refers to concussion attitudes as *the extent to which an individual believes concussions are a serious condition and should be treated as such*. Based on the information provided in the previous section, it is evident that concussions may be difficult to identify if the proper education and knowledge is not disseminated (King et al. 2014). However, some studies have found that regardless of knowledge, concussions are often left unreported by those who sustain them to avoid being perceived as unable to tolerate pain, appearing weak, and being labeled as a “wimp” or “sissy” (Courtenay 2000; Kroshus et al. 2014; 2015; McCrea et al. 2004; Reed 2013). Other reasons players do not report concussions are related to maximizing field time. Players do not want to let down their team, leave the current game, be excluded from future games, or lose their position

in the team line-up (Kroshus et al. 2014; 2015; McCrea et al. 2004). These findings point to the pressures that discourage players from reporting concussions.

Overall, research suggests more than half of all players intentionally do not report their concussions and continue to play when injured (Kroshus et al. 2015; Register-Mihalik et al. 2013). Research about high school football players found perceived team norms and concussion reporting attitudes to be highly correlated, such that poor individual attitudes about reporting were related to the perception that the overall team culture is not to report (Kroshus et al. 2015). Furthermore, studies of high school football players compared with college football players suggest prolonged exposure to the contact sports culture is related to low rates of reporting (Register-Mihalik et al. 2013).

Encouragement to engage in hegemonic masculinity is evident within the culture of football. However, social pressure to perform hegemonic masculinity is the burden of all men. In the interest of maintaining gender performance men behave in ways that put their health and safety at risk. This is true of football players regarding concussions, and men's behavior related to health and illness. Therefore, the current study suggests the following hypothesis:

H₂: The level of adherence to hegemonic masculinity will be negatively related to the attitudes men have about concussions and their severity.

Background Factors

There are several background factors this study considers when analyzing the impact of hegemonic masculinity on concussion knowledge and attitudes. These include *date of data collection, age, hometown, race/ethnicity, and number of concussions*

sustained. This study considers date of data collection because the film “Concussion” was released during the course of the study, and exposure to the film might impact *concussion knowledge* and *concussion attitudes*. *Age* is controlled for due to the possible increase in exposure to the culture of contact sports (Register-Mihalik et al. 2013).

Parallels between masculinity and rural lifestyle exist when it comes to health behaviors and beliefs about health conditions. People from rural areas have a tendency to believe in self-reliance, and therefore seek treatment for health-related issues less frequently than people from urban areas (Bushy 2009). As a result, *hometown* is factored into the analysis for this study.

Race/ethnicity is controlled for in this study due to the hierarchal level of success suggested to factor into achieving hegemonic masculinity, which may influence minority men differently than white men (Connell and Messerschmidt 2005; Evans et al. 2011). Men who have sustained a concussion are likely to have acquired greater knowledge about concussions. For this reason, *number of concussions sustained* is also included as a control variable.

Summary and Organization of the Next Chapter

This chapter explained the guiding theory of this thesis, and reviewed the relevant literature informing hypotheses of this study. Hypotheses were presented that suggest an influence of adherence to hegemonic masculinity on concussion knowledge and attitudes. The next chapter provides a detailed description of study participants, methods used to collect data, variables analyzed, and the analytic strategy used to test hypotheses.

CHAPTER III

METHOD

Chapter Three provides a description of the data collection method and analytic strategy. The measurement of independent variables, dependent variables, and control variables is described. The analytic strategy is then presented.

Data

Data were collected from males enrolled in introductory Sociology courses at a Midwestern university. This university is located in a city that would be classified as rural if college students were excluded from the population. A majority (77.43%) of the students are undergraduates, and graduate students consist of 19.14% of the student population. Males enrolled at the university account for 52.7% of the student population, and females account for 47.3% of the population. White/Non-Hispanic Americans represent 78.85%, and the average age is 22.84.

Self-administered questionnaires (Appendix A) were distributed in person to approximately 280 students. To ensure an adequate number of responses was obtained, two waves of data collection were conducted. One wave was conducted in early December 2015, and the second wave occurred during mid-February 2016. Assuming all enrolled students were present during the date and time of distribution, there was a 57.4% response rate ($N = 277$). However, because this study is looking only at males ($N = 126$), females were excluded from the survey ($N = 151$). Participants were asked about their

concussion knowledge, concussion attitudes, and beliefs about masculinity using two previously developed measurement tools.

Measures

Dependent Variables

The dependent variables for this study are *concussion knowledge* and *concussion attitudes*. The Rosenbaum Concussion Knowledge and Attitude Survey (RoCKAS-ST), developed for high school students (athletes and non-athletes), coaches, and athletic trainers was used to gather information about these variables (Rosenbaum 2007).

Concussion knowledge was measured with 14 “True or False” items related to facts about concussions, referred to as the Concussion Knowledge Index (CKI). This measure includes the following true statements: “There is a possible risk of death if a second concussion occurs before the first one has healed”, “People who had one concussion are more likely to have another concussion”, “Symptoms of a concussion can last several weeks”, “After 10 days, symptoms of a concussion are usually completely gone”, “Concussions can sometimes lead to emotional disruption”, and “An athlete who gets knocked out after getting a concussion is experiencing a coma”. This measure also includes the following false statements: “In order to be diagnosed with a concussion, you have to be knocked out”, “A concussion can only occur if there is a direct hit to the head”, “Being knocked unconscious always causes permanent damage to the brain”, “Sometimes a second concussion can help a person remember things that were forgotten after the first concussion”, “After a concussion occurs, brain imaging (CAT scan, MRI, X-ray, etc.) typically shows visible physical damage (bruise, blood clot) to the brain”, “If you receive one concussion and you have never had a concussion before, you will

become less intelligent”, “After a concussion, people can forget who they are and not recognize others but be perfect in every other way”, and “There is rarely risk to long-term health and well-being from multiple concussions”. Correct responses were coded with (1) and incorrect responses are coded with (0). Each correct response represents one point toward a total possible score of 14 points. The number of correct responses is added to indicate a total score, with possible scores ranging from (0) = low level of concussion knowledge to (14) = high level of concussion knowledge. Total scores were divided by the total number of items and multiplied by 100, providing a percentage of correct responses to indicate level of *concussion knowledge*.

Concussion attitude was measured with five Likert-scale items, referred to as the Concussion Attitude Index (CAI). This measure included the following three items, which were reverse coded: “I would continue playing a sport while also having a headache that results from a concussion”, “I feel that concussions are less important than other injuries”, and “I feel that an athlete has a responsibility to return to a game even if it means playing while still experiencing symptoms of a concussion”. Two items that were not reverse coded included: “I feel that coaches need to be extremely cautious when determining whether an athlete should return to play”, and “I feel that an athlete who is knocked unconscious should be taken to the emergency room”. Response choices were (1) = Strongly Disagree, (2) = Disagree Slightly, (3) = Slightly Agree, and (4) = Strongly Agree. Higher scores indicate participants take concussions seriously, and lower scores indicate participants do not take concussions seriously. Total scores were divided by the total number of items, providing an index for how serious participants are about

concussion severity. The Cronbach's alpha reliability coefficient for *concussion attitudes* is .66.

Independent Variables

Hegemonic masculinity is measured by two aspects of masculinity from the Male Role Norms Inventory-Revised (MRNI-R) (Levant, Smalley, Aupont, House, Richmond, and Noronha 2007). The original inventory includes seven aspects of masculinity: *Restrictive Emotionality, Self-Reliance Through Mechanical Skills, Negativity Toward Sexual Minorities, Avoidance of Femininity, Importance of Sex, Toughness, and Dominance*. This study is focused on the factors of *Restrictive Emotionality* and *Toughness*, as these items most closely relate to men's health seeking behaviors and attitudes about health.

Restrictive emotionality is measured with the following seven Likert-scale items: "A man should never admit when others hurt his feelings", "Men should not be too quick to tell others that they care about them", "Men should be detached in emotionally charged situations", "A man should not react when other people cry", "One should not be able to tell how a man is feeling by looking at his face", "Fathers should teach their sons to mask fear", and "I might find it a little silly or embarrassing if a male friend of mine cried over a sad love story". Each question had four response options: (1) = Strongly Disagree, (2) = Disagree Slightly, (3) = Slightly Agree, and (4) = Strongly Agree. Scores were added and then divided by the total number of items, providing an index for level of adherence to restrictive emotionality. Index scores range from low to high with (1) = low adherence to restrictive emotionality and (4) = high adherence to restrictive emotionality. The Cronbach's alpha reliability coefficient for *restrictive emotionality* is .72.

Toughness is measured using the following five Likert-scale items: “When the going gets tough, men should get tough”, “A young man should try to be physically tough, even if he’s not big”, “Men should get up to investigate if there is a strange noise in the house at night”, “It is important for a man to take risks, even if he might get hurt”, and “A man must be able to make his own way in the world”. Each question has four response options: (1) = Strongly Disagree, (2) = Disagree Slightly, (3) = Slightly Agree, and (4) = Strongly Agree. Scores were determined by adding the corresponding numbers to each item, and then dividing by total number of items, providing an index for the level of adherence to toughness. Scores range from low to high with (1) = low adherence to toughness and (4) = high adherence to toughness. The Cronbach’s alpha reliability coefficient for *toughness* is .60.

Control Variables

Several control variables are considered in the analysis for this thesis. They are *date of data collection*, *age*, *hometown*, *race/ethnicity*, and *number of concussions*. *Date of data collection* is represented as (0) = data collection occurred prior to the “Concussion” movie release, and (1) = data collection occurred after the “Concussion” movie release. *Age* is measured in years, and ranges from 18-33. *Hometown* was coded such that *rural* = (1) and *urban* = (0). The United States Census Bureau (2010) defines rural areas as “populations of less than 50,000”. This was the definition used to determine how responses were coded. For *race/ethnicity*, *white/caucasian* = (1), and those who identify themselves as any other race were coded as *non-white* = (0). *Number of concussions* range from 0 - 6, and is measured based on the number of single concussions participants have sustained.

Analytic Strategy

Descriptive statistics will be presented. Ordinary Least Squares (OLS) regression will be used to analyze the relationships between concussion knowledge and attitudes and the level of adherence to hegemonic masculinity. Two models will be presented -- one for each dependent variable. As suggested by *Hypothesis 1*, it is expected that as the level of hegemonic masculinity increases, the level of concussion knowledge will decrease. This same strategy will be used to test *Hypothesis 2*, which expects to find a negative relationship between concussion attitudes and the level of adherence to hegemonic masculinity, while controlling for *concussion knowledge*.

Summary and Organization of the Next Chapter

Chapter Three described the participants, data collection, and the measurement of variables. A strategy for analysis was also provided. Chapter Four provides descriptive statistics for the sample, and the results of the analysis.

CHAPTER IV

RESULTS

This study examines the relationships between hegemonic masculinity and the knowledge and attitudes college men have about concussions. This chapter presents descriptive statistics, including means and standard deviations. Then, the results from the analyses that were conducted using Ordinary Least Squares (OLS) regression will be presented. Finally, the chapter will discuss whether the results support the hypotheses.

Descriptive Statistics

Descriptive statistics are presented in Table 1. The average age of participants was about 19 ($M = 19.37$, $SD = 1.74$). Whites represented 84.1% of the sample ($n = 106$), while non-whites accounted for 14.3% ($n = 18$). A majority (62.7%) of participants indicated they had not sustained a concussion ($n = 79$). In total, 14.4% of participants indicated they had sustained 1 concussion ($n = 18$), 11.1% of participants indicated they had sustained 2 concussions ($n = 14$), 5.6% of participants indicated they had sustained 3 concussions ($n = 7$), 4.0% of participants indicated they had sustained 4 concussions ($n = 5$), .8% of participants indicated they had sustained 6 concussions ($n = 1$), and .8% of participants indicated the number of concussions they had sustained is unknown ($n = 1$). The average number of concussions sustained by this sample is less than one ($M = .75$, $SD = 1.22$). Over half (57.9%) of the participants indicated their hometown was urban ($n = 73$), and 42.1% indicated their hometown was located in a rural area ($n = 53$). Release of the film “Concussion” occurred after collecting data from 44.4% of the respondents

($n = 56$). The remaining 55.6% of the sample completed the questionnaire following the release of the film ($n = 70$).

Table 1. *Descriptive Statistics* ($N = 126$).

Variables	M	SD	Scale
Concussion Knowledge (%)	71.43	9.54	1-100
Concussion Attitudes	3.26	.53	1-4
Toughness	3.14	.50	1-4
Restrictive Emotionality	2.21	.56	1-4
Age	19.37	1.74	-
Race/Ethnicity ^a	.85	.35	-
Hometown ^b	.42	.49	-
Pre-movie release ^c	.44	.50	-
Number of Concussions Sustained	.75	1.22	-

^a The proportion who self-identify as white.

^b The proportion whose hometown is rural.

^c The proportion who participated in the survey prior to the “Concussion” movie release.

On average, the respondents’ concussion knowledge was fairly high ($M = 71.43$, $SD = 9.54$), with scores ranging from 42.86% to 92.86%. On average, respondents had relatively high attitudes about concussions, such that they believed concussions are serious conditions ($M = 3.26$, $SD = .53$). Respondents, on average, adhered to *toughness* ($M = 3.14$, $SD = .50$) to a higher degree than they adhered to *restrictive emotionality* ($M = 2.21$, $SD = .56$).

OLS regression was performed to test the hypotheses, and results are presented in Table 2. Model 1 tests the relationship between adherence to *toughness* and *concussion knowledge*. The model was not significant. Hypothesis 1, which suggests high adherence to *hegemonic masculinity* is related to low *concussion knowledge*, therefore was not

supported. Results from Model 2, testing the relationship between *concussion knowledge* and *restrictive emotionality*, also did not support Hypothesis 1, but the model was marginally significant ($F = 2.122, p = .056$), accounting for 5.5% of the variation in *concussion knowledge* ($R^2 = .055$). In addition, *race/ethnicity* was a significant variable for Model 2 ($p = .008$), demonstrating that self-identification as *white* was positively related to high *concussion knowledge*.

Table 2. *Regression Analysis Predicting Concussion Knowledge (N = 122).*

Variables	Model 1			Model 2		
	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β
Age	.172	.501	.032	.184	.504	.034
Race/Ethnicity	7.190**	2.678	.250	7.259**	2.675	.252
Hometown	-1.615	1.784	-.085	-1.309	1.811	-.067
Number of Concussions Sustained	-.283	.729	-.036	-.145	.737	-.018
Date of Survey Distribution	2.371	1.760	.125	2.194	1.775	.113
Toughness	-2.263	1.885	-.112	-	-	-
Restrictive Emotionality	-	-	-	-2.118	1.706	-.117
<i>F</i> for model		1.813			2.122†	
Adjusted R^2		.041			.055	

* $p < .05$. ** $p < .01$. *** $p < .001$. † $p < .10$

Results from the regression analysis for *concussion attitudes* are presented in Table 3. Two models were conducted—one for each component of hegemonic masculinity. Overall, the first model was significant ($F = 2.415, p = .018$), and accounted for 8.9% of the variation in *concussion attitudes* ($R^2 = .089$). *Concussion knowledge* was

significantly and positively related to *concussion attitudes* ($\beta = .235, p = .015$). Furthermore, *toughness* was a significant variable in this model ($\beta = -.226, p = .015$), providing support for Hypothesis 2, which states high adherence to hegemonic masculinity is related to low *concussion attitudes*. Model 2 examined the relationship between *concussion attitudes* and *restrictive emotionality*. Overall, this model was significant ($F = 2.563, p = .025$), and *concussion knowledge* was significant and positively related to *concussion attitudes* ($\beta = .012, p = .023$). The model accounted for 8% of the variation in *concussion attitudes* ($R^2 = .080$). This model also supported Hypothesis 2 by demonstrating high adherence to *restrictive emotionality* was related to low *concussion attitudes*.

Table 3. *Regression Analysis Predicting Concussion Attitudes (N = 125)*.

Variables	Model 1			Model 2		
	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β
Age	.011	.028	.036	.023	.027	.077
Race/Ethnicity	.124	.153	.076	.012	.150	.008
Hometown	.057	.100	.052	.105	.099	.097
Number of Concussions Sustained	-.038	.040	-.087	-.044	.040	-.099
Date of Survey Distribution	-.056	.098	-.052	-.058	.097	-.054
Concussion Knowledge	.013*	.005	.235	.012*	.005	.219
Toughness	-.259*	.105	-.226	-	-	-
Restrictive Emotionality	-	-	-	-.227*	.093	-.228
<i>F for model</i>		2.563**			2.415**	
<i>Adjusted R²</i>		.089			.080	

* $p < .05$. ** $p < .01$. *** $p < .001$

Summary and Overview of Next Chapter

This chapter presented the findings of this research. Descriptive statistics were provided. Overall, the results of both regression models for *concussion attitudes* support Hypothesis 2, suggesting a negative and significant relationship exists between adherence to hegemonic masculinity and attitudes about concussions. In other words, the more men hold traditional beliefs about *toughness* and *restrictive emotionality*, the more likely it is they will believe concussions are not a serious issue. Chapter Five will present a summary of the results, relating the findings back to literature regarding concussion knowledge and attitudes, hegemonic masculinity, and masculinity and health. Contributions of this research to current literature will be discussed, as well as limitations and suggestions for future research about concussions.

CHAPTER V

DISCUSSION AND CONCLUSION

This study explored the relationships between adherence to hegemonic masculinity and the knowledge and attitudes men have about concussions. In this chapter, a summary of findings is presented, including whether the results support the hypotheses. The findings are discussed in greater detail, and the social implications of the research findings are presented. Limitations are outlined, and suggestions for future research on concussions are given.

Discussion

This study examined the knowledge and attitudes men have about concussions. Drawing from research on concussion knowledge, as well as health attitudes and behaviors of men, two hypotheses were developed. Hypothesis 1 suggests a negative relationship between concussion knowledge and adherence to hegemonic masculinity, such that low concussion knowledge is predicted by greater adherence to toughness and restrictive emotionality. Hypothesis 2 suggests a negative relationship between concussion attitudes and adherence to hegemonic masculinity, such that the attitude that concussions are not serious, is predicted by greater adherence to toughness and restrictive emotionality. When predicting concussion attitudes, concussion knowledge was included as a control variable based on the assumption that high concussion knowledge results in more serious attitudes about concussions. Other control variables included age, race/ethnicity, hometown, number of concussions, and date of data collection. Four

models of Ordinary Least Squares (OLS) regression were performed to test the hypotheses.

Respondents in this study had relatively high concussion knowledge and high adherence to hegemonic masculinity. The first regression analysis, which tested the relationship between adherence to hegemonic masculinity and concussion knowledge, did not support Hypothesis 1. Prior literature on masculinity and health suggests health information and treatment seeking behavior are limited among men. This research only accounts for behavior, and does not account for current knowledge. It is possible that there are characteristics of this sample that should be further explored to determine why adherence to hegemonic masculinity does not predict concussion knowledge. In any case, the present study suggests other factors matter in predicting concussion knowledge, and that hegemonic masculinity does not prevent acquiring such knowledge.

In the regression models testing the relationship between hegemonic masculinity and concussion attitudes, toughness and restrictive emotionality were both supportive of Hypothesis 2, suggesting that the belief that concussions are not serious is predicted by greater adherence to toughness and restrictive emotionality. Furthermore, this analysis controls for knowledge, suggesting that despite the relatively high knowledge of the sample, respondents still maintained attitudes that concussions are not serious. These results align with prior research that suggests concussion severity is intentionally minimized and contributes to the underreporting of concussions regardless of knowledge (Courtenay 2000; Kroshus et al. 2014; 2015; McCrea et al. 2004; Reed 2013).

Findings from this study are in alignment with evidence from past research on masculinity and concussions showing men's encouragement to enact hegemonic

masculinity. The role of adherence to toughness and restrictive emotionality in predicting concussion attitudes further demonstrates the health challenges men face. For example, past research highlights that men are frequently encouraged to act tough, whether that means taking physical risks or denying the presence of injury or illness at the risk of being questioned about their masculinity. Regarding concussions, this same fear of gender assessment may be motivating men to normalize engagement in physically risky behavior and to believe they are invincible to injury.

Implications

There are several implications that should be considered as a result of this study's findings. Prior research has demonstrated that men around the world have significantly poorer health compared to women (Evans et al. 2011; Levant and Wimer 2014; Mahalik et al. 2007), and that men utilize health care services less frequently than women (Courtenay, 2000; Evans et al. 2011; Levant et al. 2009; Levant and Wimer 2014; Mahalik et al. 2007; Reed 2013). Research also has demonstrated the need for increased education and awareness about concussions and their severity in addition to identifying social stigma faced by men who sustain concussions (Llewellyn et al. 2014; McCrea et al. 2004; Taylor and Sanner 2015). Just as men from prior studies exhibit a reluctance to seek health information and acknowledge health concerns at the risk of gender assessment, men's responses in this study demonstrate a similar pattern of potential reluctance to report concussions. In terms of providing solutions to the problem of concussions, the social pressure for men to perform hegemonic masculinity should be treated as a pressing issue. Reducing such pressure will likely improve men's attitudes about concussions.

Bringing awareness can be challenging when the culture of contact sports upsets efforts to draw attention to the problem of concussions. Pressure for men to take risks is pervasive in the National Football League (NFL) and the competitive culture of contact sports (Connell and Messerschmidt 2005; Evans et al. 2011; Levant et al. 2009). For example, the NFL denied the connection between Chronic Traumatic Encephalopathy (CTE) and football until March 15, 2016. In response, a class action lawsuit was filed against the NFL on March 29, 2016 by a former player, based on past decades during which players were coached to intentionally put their bodies at risk during play. The lawsuit is one of many that claim the organization denied and concealed the dangers of playing football despite research linking long term health issues with head injuries. In addition, the lawsuit asserts that proper preventative measures were not taken to protect players from head injuries, and that the NFL should be accountable for lifetime medical monitoring for players who have sustained head injuries (NBC Sports 2016). If the lawsuit goes to trial, the potential outcome could result in an initiative to increase educational programs to raise awareness about and increase attention to the severity of concussions. The attention to concussions in the NFL could result in further investigation of coaching and playing environments in middle schools, high schools, and universities. A necessary shift must occur, not only in the way society views concussions, but in the way society expects men to treat concussions.

Men should be encouraged by society to seek concussion information and treatment because men's concussions have a public health issue. However, before the issue of concussions can be solved, hegemonic masculinity need to be discouraged or redefined. Therefore, society should avoid reinforcing performances of hegemonic

masculinity that lead to increased concussions and lack of taking concussions seriously. Alternative ways of performing masculinity need to be embraced by society such that men are encouraged to seek help for issues they face.

Limitations

There are some limitations of this study that should be considered. For example, the sample was taken from two introductory classrooms within one discipline at a single university in the Midwest. The findings can not be generalized beyond this limited sample. Furthermore, it is possible that characteristics of this sample are unique such that the regional context differs from students attending universities in other regions. Students from other regions may hold different values about masculinity or have more or less education about concussions. In addition, universities located in other regions may have different emphases on competitive sports culture. A vast majority of the respondents indicated their age as 19. The limited variation in age of the sample is a limitation because characteristics of this particular age group may have influenced the findings. For example, older or younger respondents may have different concussion knowledge and hold different concussion attitudes based on education or life experiences. Further, the young age of the respondents in this study prevents the study's findings from being generalized to other generations of people. Although self-identification as white was related to greater concussion knowledge, it is difficult to fully explore the role of race, given the limited racial diversity of the sample. People of color in the United States have historically had lower levels of education (Farkas 2003), which may impact concussion knowledge and attitudes. The relatively small sample size is also a limitation because the sample is not large enough to control for other important variables.

Future Research

Future research should explore concussion knowledge and attitudes across a more diverse age range to examine what various generations know and think about concussions. An overwhelming majority of respondents had participated in organized contact sports at some point in their lives. Future studies should investigate concussion knowledge and concussion attitudes of people who are currently not and have not ever been involved in contact sports. A majority of this study's participants ($n = 121$) have participated in contact sports. Participants who have not been involved in contact sports may have a different level of adherence to hegemonic masculinity than the respondents in this sample. In addition, competitive sports culture within universities may influence hegemonic masculinity, so future research should also explore groups of people outside of the university environment, such as people in the professional workforce, parents, retired individuals, and people from other cultures. Future research should also include a variety of higher education settings, high schools, middle schools, and professional athletics to better generalize the concussion knowledge and concussion attitudes athletes have. Other cultures may not value masculinity as it exists through contact sport performances in the United States. Therefore, international sports cultural studies should also be done to compare differences in how other countries encourage or discourage demonstrations of hegemonic masculinity through contact sports involvement, and how that impacts the players' concussion knowledge and concussion attitudes.

Prior research has demonstrated racial disparities in health (Williams and Collins 1995) and the ability to achieve hegemonic masculinity (Evans et al. 2011). Therefore, future concussion research should further explore the relationship between race/ethnicity

and adherence to hegemonic masculinity. Although this study focused on the concussion knowledge and attitudes of men, women's concussion knowledge and attitudes matter because, as discussed in the theoretical background for this study, women participate in the reinforcement of men's behavior. Therefore, exploration of women's adherence to masculinity in regard to concussion knowledge and concussion attitudes should be considered in future research, as well.

Summary

Results from this study suggest that men's adherence to hegemonic masculinity negatively impacts concussion attitudes. These findings identify men's engagement in traditionally masculine performances as a reason why men are reluctant to take concussions seriously. This study contributes to concussion literature not only by highlighting the problem of concussions, but by identifying hegemonic masculinity as central to the public health concern of concussions. It is important to recognize the factors that influence choices men make about their health, including their concussion knowledge and attitudes.

APPENDIX A

Section 1: Please read the following statements and circle TRUE (T) or FALSE (F) for each question.

- | | | |
|--|---|---|
| 1. There is a possible risk of death if a second concussion occurs before the first one has healed. | T | F |
| 2. People who had one concussion are more likely to have another concussion. | T | F |
| 3. In order to be diagnosed with a concussion, you have to be knocked out. | T | F |
| 4. A concussion can only occur if there is a direct hit to the head. | T | F |
| 5. Being knocked unconscious always causes permanent damage to the brain. | T | F |
| 6. Symptoms of a concussion can last several weeks. | T | F |
| 7. Sometimes a second concussion can help a person remember things that were forgotten after the first concussion. | T | F |
| 8. After a concussion occurs, brain imaging (CAT scan, MRI, X-ray etc.) typically shows visible physical damage (bruise, blood clot) to the brain. | T | F |
| 9. If you receive one concussion and you have never had a concussion before, you will become less intelligent | T | F |
| 10. After 10 days, symptoms of a concussion are usually completely gone. | T | F |
| 11. After a concussion, people can forget who they are and not recognize others but be perfect in every other way. | T | F |
| 12. Concussions can sometimes lead to emotional disruption. | T | F |
| 13. An athlete who gets knocked out after getting a concussion is experiencing a coma. | T | F |
| 14. There is rarely risk to long-term health and well-being from multiple concussions. | T | F |

Section 2: For each question, circle the number that best describes how you feel about each statement.

- I would continue playing a sport while also having a headache that results from a concussion.
(1) Strongly Disagree (2) Disagree Slightly (3) Agree Slightly (4) Strongly Agree
 - I feel that coaches need to be extremely cautious when determining whether an athlete should return to play.
(1) Strongly Disagree (2) Disagree Slightly (3) Agree Slightly (4) Strongly Agree
 - I feel that concussions are less important than other injuries.
(1) Strongly Disagree (2) Disagree Slightly (3) Agree Slightly (4) Strongly Agree
 - I feel that an athlete has a responsibility to return to a game even if it means playing while still experiencing symptoms of a concussion.
(1) Strongly Disagree (2) Disagree Slightly (3) Agree Slightly (4) Strongly Agree
 - I feel that an athlete who is knocked unconscious should be taken to the emergency room.
(1) Strongly Disagree (2) Disagree Slightly (3) Agree Slightly (4) Strongly Agree
-

Section 3: Circle the number based on how much you agree with each statement.

1. A man should never admit when others hurt his feelings.
(1) Strongly Disagree (2) Disagree Slightly (3) Agree Slightly (4) Strongly Agree
2. Men should not be too quick to tell others that they care about them.
(1) Strongly Disagree (2) Disagree Slightly (3) Agree Slightly (4) Strongly Agree
3. When the going gets tough, men should get tough.
(1) Strongly Disagree (2) Disagree Slightly (3) Agree Slightly (4) Strongly Agree
4. Men should be detached in emotionally charged situations.
(1) Strongly Disagree (2) Disagree Slightly (3) Agree Slightly (4) Strongly Agree
5. A man should not react when other people cry.
(1) Strongly Disagree (2) Disagree Slightly (3) Agree Slightly (4) Strongly Agree
6. A young man should try to be physically tough, even if he's not big.
(1) Strongly Disagree (2) Disagree Slightly (3) Agree Slightly (4) Strongly Agree
7. One should not be able to tell how a man is feeling by looking at his face.
(1) Strongly Disagree (2) Disagree Slightly (3) Agree Slightly (4) Strongly Agree
8. Fathers should teach their sons to mask fear.
(1) Strongly Disagree (2) Disagree Slightly (3) Agree Slightly (4) Strongly Agree
9. Men should get up to investigate if there is a strange noise in the house at night.
(1) Strongly Disagree (2) Disagree Slightly (3) Agree Slightly (4) Strongly Agree
10. It is important for a man to take risks, even if he might get hurt.
(1) Strongly Disagree (2) Disagree Slightly (3) Agree Slightly (4) Strongly Agree
11. I find it a little silly or embarrassing if a male friend of mine cried over a sad love story.
(1) Strongly Disagree (2) Disagree Slightly (3) Agree Slightly (4) Strongly Agree
12. A man must be able to make his own way in the world.
(1) Strongly Disagree (2) Disagree Slightly (3) Agree Slightly (4) Strongly Agree

Section 4: In this section, please answer the following questions about yourself to the best of your knowledge. Circle the option which best describes you.

1. What is your gender?
Male Female
Other: (Please indicate): _____
2. What is your age? _____

3. What is your grade level?

Freshman

Sophomore

Junior

Senior

Graduate Student

Other: (Please indicate): _____

4. How would you describe your hometown?

Less than 50,0000

50,000 or more (Ex: Grand Forks, ND)

Large metro area (Ex: Minneapolis, MN)

5. What is your race/ethnicity?

African American

African

Pacific Islander/Hawaiian

Asian American

Asian

Hispanic – Non White

Hispanic – White

American Indian

White/Caucasian

European

Other: (Please indicate): _____

6. How many concussions have you had?

Please indicate: _____

Zero

Not Sure

7. Are you currently or have you ever been a participant in a contact sport, such as hockey, basketball, football, soccer, wrestling or boxing?

Yes or No

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