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Name of the Game: A Media Analysis of Concussion Terminology in Documentary Film

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ABSTRACT

This project explores the way concussions are communicated to us through the use of documentary film. By examining the use of concussion related terms, as well as the tone and general word choice, it can be seen that there are certain words and phrases that are commonly left out, and others that are used too much. The differences in the usage of these words and tones reflects the current concussion crisis occurring in many contact sports around the world. This media analysis was conducted with the goal of finding trends in how concussions are discussed depending on the sport and when the documentary was made, and also to point towards the gaps in terminology where more work could be done to educate and warn people about concussions. The analysis consisted of viewing 15 full-length documentaries/films and analyzing them through a constructed codebook. The films were watched over a month-long period, allowing for the researcher to dive into many types of sports, sources, and opinions. The topic was chosen in an effort to incorporate communication and sports with the highly discussed topic of concussions. It was found that concussions are referred to in different ways based on the goals of the person speaking about them. There were also interesting trends in the data surrounding when athletes go through proper protocol versus rush back into play. The results will be presented in graphs and charts to portray their importance and effects. Due to the current focus of concussions in football specifically, there is growing need to analyze the way concussions are discussed in all outlets, and this analysis of documentaries aims to add to the discussion.

INTRODUCTION

When Dr. Bennet Omalu published his findings about CTE in the *Neurosurgery* journal he did not know what the dramatic reaction from the NFL was going to be, and he definitely did not know how his findings would eventually disrupt the way many sports are played (Omalu et al., 2005). Dr. Omalu, at the most basic level, is the man who discovered, and put a name to, CTE. Chronic Traumatic Encephalopathy, or CTE, is a disease where the brain-cell killing protein Tau spreads through the brain in clumped sections. What makes CTE so important in the lives of many individuals who normally are not interested in the medical world is how CTE is most commonly found in athletes, and is usually a result of repeated concussions or hits to the head that go untreated or where the athlete is not given the proper time to recover. CTE mimics the symptoms of dementia, causing the athlete to suffer memory loss, personality changes like aggression and irritability, as well as focusing problems and loss of motor functions like walking and certain muscle movements. Athletes might believe they have CTE based on symptoms and their experience with head injuries, but until very recently there was no way to examine the brain to tell if the patient had CTE until they had already passed away. Researchers at Boston University's CTE center have discovered a way they believe you can test for levels of proteins in the brain to register if an athlete is on the road to CTE. There is no treatment for the disease at this point besides pain management, and often athletes are driven insane by the mix of pain and limiting body functions that having CTE causes. The disease that was thought to effect only football players who have played the sport their entire lives is now revealing to be the cause of death for athletes of all ages, some as young as high schoolers, as well as athletes involved in many other sports at various levels of professionalism. It is no longer a disease specific to

football, or sports with regular and direct head to head contact, but is now connected to heading the ball in soccer, hitting the boards or fighting in hockey, checking in lacrosse, all of the major fighting sports like MMA and boxing, as well as sports like field hockey and rugby. The vast array of individuals that are subject to the potential of having CTE is more than what the majority of people think, and the life-changing results of this disease are worse than we imagined.

Rationale

Having played rugby during my time at Bryant, I am definitely aware of the consequences and long-term effects that concussions can have on athletes. I started my research on concussions due to my personal interest in them, and have begun to realize that even those seemingly “minor” contacts to my and my teammates’ heads are dangerous as they start to add up. I was concerned specifically with my own experience having a concussion, and the resulting pressure from my coaches and fellow players to begin playing again before I had completely recovered from my symptoms. Being someone who is definitely aware of the detrimental effects of being concussed, I was surprised at how the messages my coaches directed towards me could make me genuinely consider ignoring those last lingering headaches in order to rejoin the team. If someone who is completely aware of the side effects of concussions, the horrors of CTE, and the way the majority of those related to sports are uneducated when it comes to concussions, it is hard to imagine players who ease of persuasion when they are not aware of the true dangers with concussions.

The league. Players, coaches, and leagues from youth to major leagues continue to ignore the alarming facts because of their implications for what needs to change in sports. If sports were adapted to help preventing the long-term effects of head injuries, they would no longer be considered by some as counting as sports. Those who would have the power and resources to make changes to sports and make them safer for the brains that are taking part are also the ones who make money off of the success of the league or sport. Leagues, as demonstrated by the NFL in its most recent concussion revelation and resulting media coverage, are not properly motivated to help the players, and will not admit that their sport is the underlying reason that players experience CTE in their later years. This sense of corruption among the various leagues and sports organizations is in part contributing to the concussion crisis currently occurring with athletes of all ages, and there is a need for these leagues to prioritize their players' health and safety over their increasing profit.

Besides the professional leagues, as well as some collegiate team's focus on the monetary benefits of ignoring concussions and CTE, those with the power to change the way the game is played also are more focused on the pride and acknowledgement associated with sports over the player's health. When coaches and the league choose to promote playing through injuries as opposed to creating an environment where injuries are always reported, they are prioritizing their own glory. Those who have the power in leagues where sports do not produce a large profit are motivated by the attention and respect they get when their team does well, and they do not want their best players to be sidelined by an injury that they can not physically see.

Documentary. As well be discussed in the literature review, documentary film is one of the most trusted media outlets for receiving information. Due to the time it takes to create a documentary, and the fact that anything presented in a documentary is required to be non-fiction, documentaries are one of the most trusted forms of media. Documentaries are often used in classes as a teaching aid, and are turned to for real-world, in-depth looks at different topics. Looking at documentaries about concussions allowed me as a researcher to analyze information that is being presented to viewers as “true”, and code a source that is highly trusted. Documentary analysis is not something that is commonly done, which allows for someone who is curious about different forms of media and how they discuss concussions to enter a new field of knowledge and potentially to contribute. Concussions are a very serious topic, so discussing them in a mediated form that is defined as non-fiction, and often requires a long process of interviewing and in-depth research, presents an interesting study for someone concerned with concussion analysis.

Research questions

With the goal of looking at concussions and how they are portrayed in a trusted form of media, I selected research questions to base my analysis around. The selection of research questions as opposed to hypotheses better allowed for an unbiased look at each of the documentaries coded, as well as acknowledged my interest in the subject but lack of known direction for where the project would lead. Looking at how concussions were communicated about in documentaries is an uncharted area of research, so the use of hypotheses would have been inappropriate because there was no way to make even a guess at what topics or trends

would occur. Three research questions were created with the goal of allowing the research to happen without limitations. The questions used were:

- How are concussions discussed in documentaries?
- What differences exist in the way concussions are discussed (what independent variables become apparent)?
- If differences in terminology and tone exist, what are the potential effects of the way concussions are discussed?

These questions, while vague, present a framework for creation of the codebook, as well as serve as the backbone for the following research and lens of focus throughout the project. The questions allow for flexibility as a result of the unknown aspects of the project, but also lead to the production of conclusions.

LIMITATIONS

Exploring an area of research that has never been truly studied presents a few limiting factors in the research due to high level of unknown. One of the reasons that concussion researchers in the past may have avoided studying documentaries is because of the unequal distribution of which sports have documentaries create about concussions that occur within them. Choosing documentaries to study automatically limits being able to analyze an equal amount of different sports because you can only study the documentaries that exist. This automatically places a bias on the number of documentaries created about football and the NFL regarding concussions. To prevent bias from occurring in the results, there was effort made to select documentaries regarding as many different sports as possible, including hockey, soccer,

rugby, formula 1, and boxing, as well as documentaries selected analyzing athletes at different ages who play these sports. Documentaries were selected from various sources and from different production companies in order to avoid bias based on similar motivations behind the documentary's creation. There were also extensive notes taken about each of the films viewed in order to document different potential biases while watching the films.

A second limitation that occurred during the research was the limited access to certain sites that post documentaries. Due to the fact that these films are often created using a lot of time and money, most of the higher-quality films require that viewers pay to view them. I was able to pay to watch a couple of the documentaries through YouTube for around three or four dollars per film, but some of the more popular documentaries that many websites recommended were also the ones that cost around \$20 or \$30 to view. I was pointed towards a couple documentary sites that were accessible through Bryant University, and was able to access good documentaries that focused on a variety of sports through this site. There was a handful of films that I was unable to watch and code due to their pricey fees.

The final limitation that should be considered when looking into the research is the time it takes to watch a complete documentary while also coding a taking notes. There were many times when the documentaries were paused in order for notes to be taken or tallies to be recorded, which meant that most of the documentaries took longer than just the "run-time" to view. For example, a film that runs for an hour and a half most likely took two hours or more to view so that it could be paused frequently for observations to be recorded. This limitation meant that less movies were able to be coded for in the time frame of the study. As for most

studies, when more data is recorded the results get stronger, but the number of films that were watched allowed for completed results and an encompassing view of how concussions are discussed in documentaries.

METHODOLOGY

Documentary Selection. The documentaries selected ranged from in-depth, higher profile documentaries such as the frontline feature on the NFL and their specific concussion crisis, to shorter documentaries played on TV as part of a mini-series on amateur soccer athletes in England. Documentaries were selected based on the choice of the researcher, and were checked for which specific source and production company they derived from. It was noted when documentaries were potentially created from bias sources or with a motive in mind, which could potentially skew how concussions were discussed in the film. Documentaries that seemed to be created from an unreliable source, or those that did not seem to mention concussions or injuries in sports at all in their film were discarded. Oftentimes documentaries were selected after their trailer was viewed to solidify that concussions/CTE/head injuries were discussed in the film. Initial documentary selection and searching began through the suggestions and recommendations of sites by the faculty reviewer as well as the Bryant librarians. Sites used to watch documentaries included: Kanopy, YouTube, PBS, Netflix, New York Times, CBC, Sports Concussion Library, Top Documentary Films, and Amazon.

Codebook creation. The codebook used to tally the data was created based off of Michaelson's "Simple Content Analysis" written about in 2005. The codebook consisted of three separate sheets, shown in Appendix A. Codebook one consists of the information about the

film, including the name of the film, the date of release, the producer/company that made the film, the length of the film, etc. Codebook two focused on when athletes were subject to receiving concussions, or how concussion protocol was used surrounding a player that was concussed/potentially concussed. Lastly, Codebook three was where specifically concussion terminology was accounted for, including things like “concussion”, “CTE”, “rocked”, “name of the game”, and more. The specific words were selected for Codebook three based on the research done in the literature review on how concussions are referred to besides the use of the actual word concussions. The words selected for this codebook were the words that appeared the most in the initial research, as well as words that were commonly referred to in the life of the research when playing sports or viewing them on TV. The different concussion scenarios were selected for codebook two based off of the research done during the literature review, specifically concerning concussion protocols for different leagues, as well as what the underlying factors are that contribute to athletes not being properly treated for their head injuries. Each codebook contained a column that marked which number film was being coded for in order to allow for the data collected to be compared across codebooks for the same film.

Procedure. While watching the films, Codebook two and three were used to tally when specific words, phrases, or scenarios would occur. If a player was hit hard in the head, a tally would be placed under the “Athlete potentially concussed” column. If someone in the film said the phrase “bell-rung” when referring to a player getting it in the head of getting concussed, a tally was placed under the “bell-rung” column. Codebook one was filled out before and/or after the film was watched because it was only to collect information about the creation of the film. There were also notes taken during the viewing of each film in a separate notebook. In order to

prevent potential bias from occurring during the data collection, the coding was always completed by the same researcher. The researcher also watched all of the films in a space with limited distractions that allowed for each film to be properly watched and coded.

LITERATURE REVIEW

In the year of 2016, there were an estimated 3.8 million concussions sustained in recreational activity (Kroshus et al., 2017), which accounts for athletes in sports from youth level to adults. Concussions can be defined as a mild traumatic brain injury that is caused by coming into contact with something bluntly to the head (Sarmiento et al., 2014). While concussions can stem from a variety of sources, it is significant to realize how many of them result from activities we choose to partake in and could have prevented. The danger of concussions also lies in the fact that they are not taken as seriously or given enough time to recover because of players' pressure to return to play. It may be easy to see why someone with a broken leg cannot play their sport, but athletes with concussions do not have a physical injury that those around them can see, thus making them easier targets for be pushed to play before they are ready. As stated in Delahunty's study done on rugby players' attitudes towards concussions, when researchers asked players about pressure to play while concussed, 72.5% said they would play through a concussion if the game was important, 16.1% said they believed that games are more important than concussions, 83.1% said they would play an important match even if they were diagnosed concussed, and only 35.6% of athletes said they would report concussion symptoms without being asked. These statistics are very concerning because not only do they transcend into most all sports, but they also show a strong preference among

athletes to ignore their symptoms of concussions in an effort to play and not let their team down. This is why concussion communication is an extremely relevant topic because despite the increasing public information and media attention on concussions, athletes are still choosing to risk their health to continue playing their sport.

Concussions

Concussions have been a health problem throughout the history of sport. The injury can and does occur to those who do not play sports, but these patients do not face the same pressures as athletes do to go through the recovery process quickly. New research regarding concussions seems to be coming out day-by-day, and even though this is bringing to light how frequent the injury is and how it is effecting people in the long run, it is important to look at how concussions are talked about and the specific word choices used to discuss them.

Verbiage, as defined by the Merriam Webster dictionary, is the manner of expressing “oneself” in words. Concussion verbiage is an area of direct interest because how the term is communicated to athletes, trainers, coaches, and the general public plays a direct role in how seriously a diagnosing is taken. When specific words are used by the media or those spreading information about concussions that do not seem to convey the severity of a concussion, it reflects in the methods we use to treat the concussions, how teams support players with concussions, and how important players feel it is to report their concussion.

Unfortunately, due to the fact that some of the major concussion research only just began to emerge in the past five or so years, there are not a lot of scholars who have looked into concussion verbiage and specifically how it has changed over time. In order to look into the

way concussions have been discussed, one has to look into studies done on concussions in the past and the present, and see how the definition of concussions the scholars give has changed. Looking into the years surrounding the early 2000's, literature surrounding concussions shows the wording regarding the disease as being less serious and downplaying the severity of obtaining a concussion. In Earth et al.'s article, published in 1999, concussions are looked at in regards to the definition and treatment of an athlete wishing to return to play after a concussion. The title of the article itself, "Mild Head Injury: The New Frontier In Sports Medicine", is an example of the non-threatening tone used in the past to describe concussions. The choice of the word "mild" seems contradictory looking at it now when describing a head injury, but only because we now are aware of the seriousness of obtaining one of these head injuries. By using the word "mild", the researchers are immediately conveying a sense of non-urgency surrounding concussion treatment. The article also offers a look into the literature surrounding concussions during 1999 by referring to a concussion study as "The New Frontier". The blatantly states that studying concussions is something new, which goes to show how little focus and research was being done on something so serious. The article goes on to introduce and define concussions, and because it is part of a longer book, the chapter focuses on how athletes are returning to play. The article refers to those who are worried about concussion effects as "sensitive" to the effects of a "mild" head injury (Earth, 1999). Use of the word sensitive portrays a non-serious and almost humorous feel about those who are worried about concussions.

Another example of an article revealing the early verbiage used when describing concussions in scholarly research is Barnes et al.'s article titled "Concussion History in Elite Male

and Female Soccer Players” from 1998. This article focuses on how athletes who play professional soccer often use their head to control and move the ball, which in turn has resulted in concussions. The article uses words like “concussive episodes” when describing players who have sustained the serious brain injury (Barnes et al., 1998). The word “episodes” gives off the feel that the injury is more of a mental issue instead of a physical issue, and is more of something that a player goes through momentarily on their own. Concussions are referred to as “episodes” throughout the entire article, which looks at certain symptoms of concussion most commonly reported by soccer players. The use of words like “episodes” conveys the idea that a concussion is not only not severe, but that it also is more of a quick flash that happens and then is forgotten about quickly. The tone of the article also conveys that concussions are only experienced by professional athletes (Barnes et al., 1998). The athletes studied in the article were all U.S. Olympic soccer players, conveying the idea that this injury only occurs at the upper level of the sport (Barnes et al., 1998).

In general observation, the majority of the articles written about concussions before the year 2000 are focused on soccer. This ignores the idea that concussions occur in all types of sports, let alone all aspects of life. When looking at concussion literature more in the present day, concussions are examined though the NFL, the NHL, youth sports, soccer, and so on. As the literature becomes more and more recent, articles start to shift to focus on the severity of the injury, which brings with it the shift in the nature of the words used to describe concussions. An obvious change in the way concussions are discussed can be seen in Tator’s article publish in 2009 titled “Concussions are Brain Injuries and Should Be Taken Seriously”. Immediately the differences in wording and tone can be seen in this more recent article, mainly because of the

direct focus on the words “Brain Injury” and “Seriously”. This immediately conveys the importance of the article in terms of how it is discussing a serious injury and that the author wants to make it clear right off. The article is focused on the feasible ways that hockey can be made safer for athletes in terms of preventing concussions, using things like better education about the injury, protective equipment, and eliminating hits to the head (Tator, 2009). Compared to articles written in the early 2000’s and before, this article is more direct about the dangers of concussions, as well as uses the word concussion instead of “mild head injury” or other less-serious versions of the word.

Another strong example of the type of verbiage used to describe concussions in the more recent years is an article titled “Examining Media Contestation of Masculinity and Head Trauma in the National Football League”. This article by Anderson and Kian focuses on how NFL players are shamed into acting tough by their fellow players, coaches, and viewers, and how this forced masculinity leads to sacrificing their bodies (Anderson & Kian, 2012). The article, while focusing on the actual examination of a specific player being represented in the media after a concussion, is a great example of a new trend in the concussion literature because of how it focuses on describing concussions using the medical-specific terms. Throughout the article, concussions are referred to as “chronic traumatic encephalopathy”, which is the commonly known now-a-days as CTE. Referring to concussions this way might confuse those who are not involved in the medical field or who do not read up on concussions regularly, but it does convey a sense of medical important and seriousness surrounding concussions. Concussions are a serious medical condition, and by referring to them by their actual medical term shows how serious they are. An issue with concussions is that many athletes think that

they understand the injury because it is not necessarily severe. By referring to them as their medical name and symptoms surrounding the disease, it can convey the amount of knowledge the average person does not know about concussions.

Another example of concussion communication in the more recent years can be seen in Kroshus et al.'s 2015 article titled "Determinants of Coach Communication About Concussion Safety in US Collegiate Sport". Kroshus is an important scholar in concussion communication research, and can be found to have contributed and authored many different scholarly articles and research projects surrounding concussions. In this article, Kroshus focuses on the communication between a coach and their players about concussions, and how it can influence how comfortable a player feels talking about concussions or disclosing that they have a concussion to their team. While the article itself is interesting and an important topic in terms of understanding how to deal with concussion communication in a team dynamic, it also uses words surrounding the description of concussions that convey the importance of disclosure and proper concussion knowledge (Kroshus et al., 2015). The article refers to concussions multiple times throughout the article as "endemic", meaning regularly reported and common with people in a certain area, which in this case is referring to those athletes that play a team sport. The use of the word "endemic" is important in this article because it conveys the commonality of concussions that had not been shown by earlier research. The article also does a good job describing the symptoms and reasons for taking concussions seriously in a way that conveys the already known symptoms by defining them in more specific and direct ways that they impact an individual. The article specifies the neurological implications of having a severe concussion or multiple concussions, but does so in a way that is more sympathetic yet direct regarding

athletes who sustain concussions (Kroshus et al., 2015). This article is important in the shift of informing the public of the more understandable implications of sustaining a concussion, and is written by an author that is highly regarded in the concussion research world.

Besides looking at concussion verbiage in scholarly articles, there is a lot to be said for the way concussions are talked about in more general media. Articles come out every day from non-scholarly sources that talk about concussions, specifically regarding football and the recent studies released connecting the sport to increasingly dangerous cases of CTE. Due to how the NFL is currently in what some could call a concussion crisis, there are many examples in the media of specific words used to describe the head injury. One article by Rapaport published in mid-2017 refers to concussions as “head trauma”, which hints towards the injury as a form of trauma and an overall serious state. The words “head trauma” are again used in a CNN article published after a CTE study was released from Boston University earlier this year. The use of the word “trauma” is relatively new in terms of concussion literature, mainly because it conveys the seriousness of the injury, or the idea that a person’s actual brain is injured, bleeding, or permanently damaged. Slowly, trainers, athletes, and the NFL itself have begun to realize the danger in concussions, which is being revealed in the choice of words used by players’, as well as the media’s choice in verbiage. While their choices are improving, and concussion information is becoming more widespread, there was still a miscommunication in the word choice, mostly when comparing what was used to describe concussions in the early 2000’s compared to now. Words like “bell vibration”, “getting dinged”, “seeing stars”, and “a part of the game” were used by players, broadcasters, and sports news when they would talk about what is now known to be a serious injury (Associated Press, 2009). The problem wasn’t in the

fact that players and those connected to sports weren't aware that the injury was taking place, but more that they didn't take it seriously. Using phrases like "part of the game" signify that an injury like this is common, and almost expected.

There is an abundance of concussion information both from scholarly and non-scholarly sources. There is a general trend across all types of concussion research that follows the idea that the verbiage used in the earlier studies and articles portrays the idea that concussions are not serious injuries, that they are not common besides certain violent, major league sports, and that concussion research is only relevant to athletes who play professional sports. As the years have passed, the research has become more representative of the injury and its severity. More current research portrays concussions as extremely dangerous to athletes' long-term health, as well as a true medical emergency that requires doctor attention and the players to take a break from their sport to recover. The change in literature is important in the way it has changed the public attitude towards concussions. Head injuries were not regarded as nearly as important as they are now, and while that may not be completely due to the way articles refer to them, there is something to be said for the importance of how we repeatedly refer to injuries or major health issues. Media, as well as scholarly articles, influence the way the public thinks about certain things, so it is important to consider how critical health topics are written about.

Media Analysis

While the history of concussion research and verbiage surrounding such a serious injury is important, it is also important to dive deeper into the way in which athletes, fans, coaches, and the general public learn about concussions from the media. The media is how most people

get their news and ideas of how to think, so considering how something is represented in the media is important in understanding how the general public thinks about something. Media analysis is defined as “a general set of techniques for analyzing collections of communications” (Saraisky, 2015). A media analysis does not always mean actually describing the content of a piece of media, though that might be a part of it (Saraisky, 2015). Instead, a media content analysis looks at the trends and patterns that emerge throughout the duration or length of the media (Saraisky, 2015). Looking into the trends of the content allows researchers to compare media to each other, as well as draw further conclusions to how the content relates to and influences the public. In terms of concussion communication, there are many forms of media that communicate about concussions to the general public. Information regarding concussion research and CTE is spread through written journals on researchers’ websites. Reports of players’ concussion status are made public through injury reports and sports broadcasters in the news. Concussions are represented in movies where athletes are the main characters or important in the storyline. All of these types of media can be subject to a content analysis so that researchers can draw information and find trends across the content surrounding a certain subject.

In the history of content analysis, there are nine different approaches that are deemed “traditional” by Michaelson and Griffin in their article titled “New Model for Media Content Analysis”. The first content analysis approach is clip counting, or when media is collected and looked at for how much content was present in the certain media at a set point in time, and then data is collected to look at how the content differs over time (Michaelson, 2005). The second approach is called circulation and readership analysis, which involves the same type of

content analysis as clip counting but adds on the idea information about the publishers of the media by using information from Nielsen, Arbitron, Audit Bureau of Circulations, and other sources like this (Michaelson et al., 2005). The third approach to content analysis is advertising value equivalence, which focuses on forms of media that involve advertising. Instead of looking at the content of the ads specifically, this approach focuses on the cost of purchasing the different types of ads depending on the location, time, day, etc. (Michaelson et al., 2005). The fourth approach, called simple content analysis, involves a categorical code created based on previously sampled forms of the given media, which then are used to record the number of instances of different category values in each example of the media (Michaelson et al., 2005). This type of coding requires the same experimenter to evaluate every source of media with the created codebook to prevent interpretation differences and bias between different experimenters' beliefs. Message analysis is the fifth method of coding, which is similar to a simple content analysis while focusing on the communication methods when creating their codes (Michaelson et al., 2005). This method works for those focusing on the intended messages in articles, using the assumption that all communication methods will fall into one of the objectives. The sixth method is tonality analysis, which is looks at if the content of the article is "favorable or unfavorable to the person, company, organization, or product discussed" in the media (Michaelson et al., 2005). This method can use a classification scale or a ranking scale to decide the tone of the media. The seventh method is prominence analysis, which scores the media based on its six already determined principles: the publication or channel the media appears on, the date of the appearance, overall size/length of the media, where in the media the content appears, the presence of images, and the presence of words in the media

(Michaelson et al., 2005). Each of the six elements is given a weighted importance, and then a score is given to the elements when the experimenter is subject to the media so that it can be compared with other media to see which is more or less prominent (Michaelson et al., 2005). The eighth method is quality of coverage, where the media is given a quality score based on tonality, prominence, and inclusion of parts (Michaelson et al., 2005). The last method is competitive analysis, which is where media is analyzed to see how different products compare to each other (Michaelson et al., 2005).

In terms of my project, I will be focuses on a simple content analysis. I think developing a code book focused on what is actually being talked about in the documentaries will be the best option for my project, mainly because I can create my own scales and codes and keep a consistent view for what means what throughout all of the documentaries. I think the use of a message analysis will also be important in my project to look past what is actually being said and dive more into the meaning behind the messages being conveyed. I will be able to create a codebook that incorporates both types of content analysis, because one of the goals of my project is to look at what the message is directly saying versus what the intended or interpreted message could be. When looking at a documentary about concussions, if the messages surrounding concussions involve a lot of big, medical terms, the meaning behind the message might be that the producers of the documentary want to convey the medical seriousness of concussions. By using the two methods of content analysis, my project methods will be understood by those who have already done media content analyses, and can be compared to other media analyses who have used the same types of methods for similar projects.

A previous study done that involved both concussions and media analysis involved analyzing sports journals to see how they interpreted injury and masculinity after Aaron Rogers' suffered a serious concussion in an NFL game (Anderson & Kian, 2012). This study conducted an extensive media analysis looking at every single word in the articles, placing them in categories preset by two researchers (Anderson & Kian, 2012). The researchers worked separately to code each article, and then compared their notes to draw conclusions (Anderson & Kian, 2012). While it would not necessarily be possible or make sense to code every single word spoken in a documentary about concussions, I think that my research will fit in well with what is already out there on concussions through media analysis. As far as my examining has gone (and I have spent considerable amounts of time looking into media content analyses and if any of them talk about concussions), I think using a content analysis on documentaries to look at how concussions are communicated has not been done before by scholars. This provides a good window for me to add to the media analyses in the concussion world, while also contrasting what has already been done.

As far as media analyses in a general sense, the trends in the research already out there is that media analyses are used to explain things happening in society. Media is generally thought of as something that is seen by a large audience, so if researchers want to see what is influencing the public at large to do something or think a certain way, a content analysis is commonly used. In Kort-Butler's article titled "Content Analysis in the Study of Crime, Media, and Popular Culture" (2016), researchers looked at how the media, in the form of newspapers, movies, television programs, and internet content, represented crime in the US. Even though the study took on an extremely large amount of content and required a long time to complete,

they were able to compile large amounts of data from different media platforms in order to answer their question. As explained in this study, content analyses are important because they take the information straight from the source without any bias or issues that may rise from involving the general public. Using surveys or tests to try and answer a question involves controlling variables and potentially still receiving bias or unreliable results, which can be eliminated through a content analysis (Kort-Butler, 2016). There is potential for error in the researchers' actions, but the idea behind a content analysis is that a research can gather the data and present it in the way that they see fit, but other researchers can interpret the data a different way if they want to because it is more abstract, yet still an accurate representation of the question. This is why using content analysis for societal issues is common.

Another example of how media content analyses are commonly used can be found in Saraisky's study titled "Analyzing Public Discourse: Using Media Content Analysis to Understand the Policy Process" (2015). This study did a content analysis on news media, gathering information on the content presented by the news and powerful people that described what policy makers were doing in regards to education policies. By looking into the news media's description of the policies, researchers can better understand how the public is forming views, what specific information they are really being told, and begin to gain a better understanding of why certain policies on education are supported. This study performed a prominence analysis (Michaelson, 2005), and looked into the different sections of the paper that the information was being presented in, what page or rank on a page the article feel, what visuals were used to accompany the article, and so on (Saraisky, 2016). This study explains the importance of looking at the media content not only for what exactly it is saying, but where and when it appears to

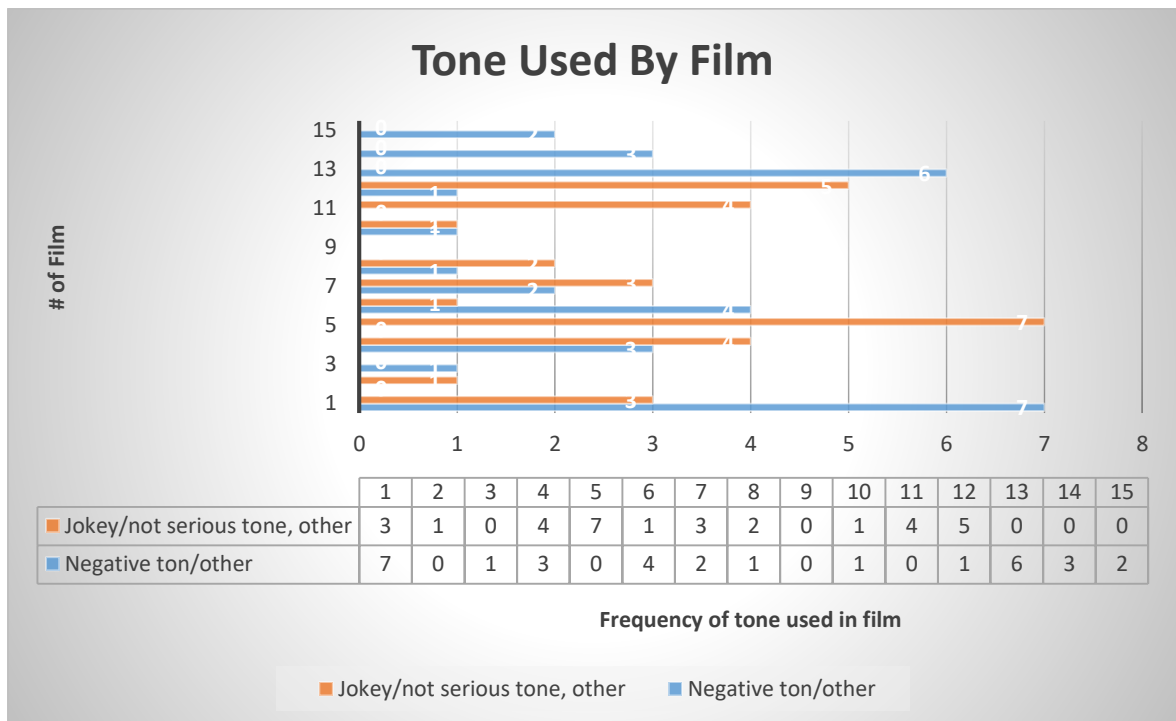
the public. Relating to my project specifically, including a part of my codebook that includes the people who created, published, and promoted the film is important, as well as looking at what type of documentary or film the movie is labeled as.

Moving Forward. For my project, it is important to consider where my project will fall in both the media analysis community and the concussion community. There are lots of media analyses out there, a group of which focus on injuries and concussions. My study will be a nice addition to what is out there so far because of the hole in considering documentaries as an important method of communications. Documentaries are often seen as a nerdy way to learn about a topic, or something that you are only watching if you are forced. Documentaries contain an abundance of important information that has been researched for a while before the documentary was made, so the data can generally be trusted from a documentary source. Concussions are also something that needs to be higher in priority of the players, teams, and leagues in all level of sports, and by looking at how they are communicated about I hope to add to the field of knowledge that already exists on the topic.

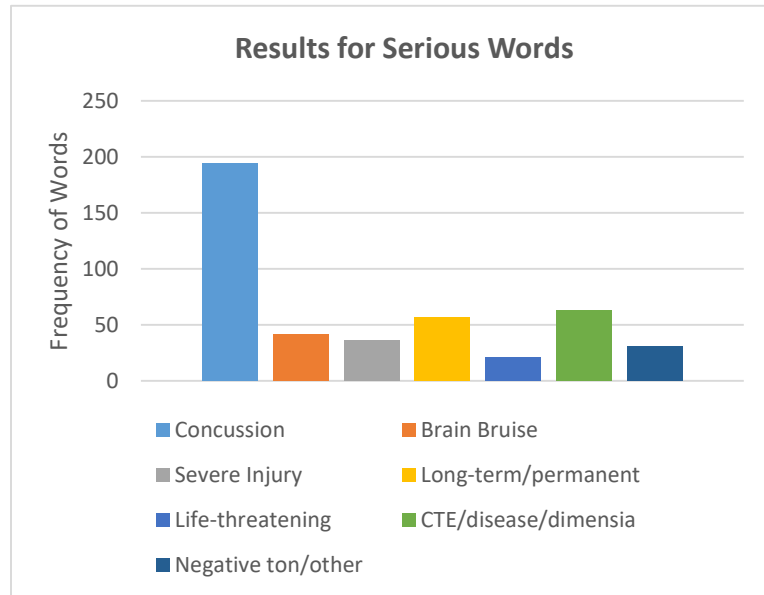
RESULTS

I watched 15 films watched that produced the resulting data in this study. There were 13 complete documentaries included in the films I viewed, as well as one TV show specifically related to concussion terminology and the movie "Concussion" starring Will Smith. All of the documentaries viewed were coded with the same three codebooks. The results were analyzed both with how many times words and scenarios appeared per book as well as how many times the words and scenarios appeared overall. Out of all the words coded for, concussion appeared

the most times, and was coded for 194 times. “Name of the game” was coded for the second most times, which was 64 times. “CTE” was coded for 63 times, or the third most common term. “Long-term/permanent” was coded for 57 times, which was the fourth most word coded for. Negative tone towards concussions and humorous tones towards concussions were both coded for 31 times. Those terms or tones that fall in the more humorous or light-hearted category were coded for 189 times, compared to those terms that were more serious and portrayed concussions as dangerous, which were coded for 443 times total. With the exception of concussion, which was the outlier by over 130 tallies, the distribution of tallies between the serious and the humorous tones and verbiage was almost equal. The chart below demonstrated the frequency of the tones used in the film. While some films included only negative and serious tones, the documentaries that included humorous and non-serious tones included high number of these non-serious tones.



Out of the more positive and humorous words used, brain bruise was the most common term coded for. The table below displays the relationship between the different positive words



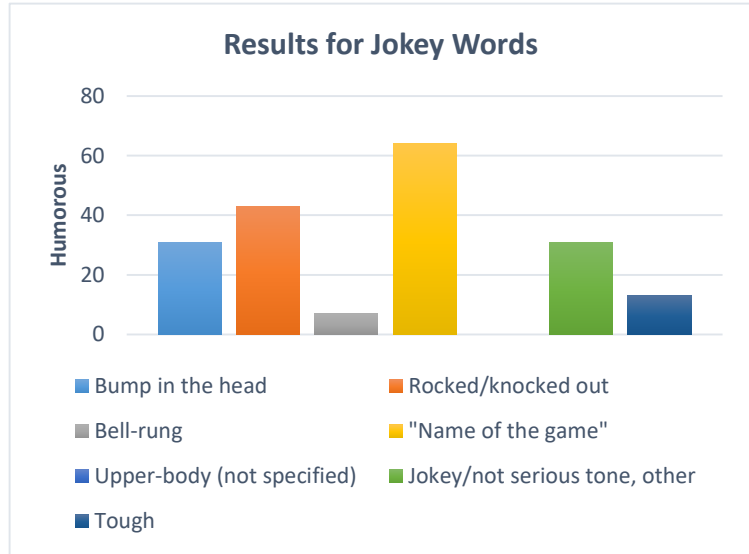
coded for in the documentaries.

When coding for serious tones and words, the words being listened for included “severe injury”, “brain bruise”, “long-term or permanent”, “CTE”, and more. The word used the most in the more serious words was concussion.

This is because the majority of the documentaries watched focused completely on head injuries and concussions. CTE was the second most word coded for when it came to the serious words used. Long-term or permanent came in third, which correlates with the idea of CTE and its description. Life threatening was the lowest word coded for in the serious words category, and was also the second lowest word tallied for overall including both the positive and negatives words and tones.

For the positive tone words, the words coded for included things like “bump in the head”, “rocked or knocked out”, “Bell-rung”, “name of the game”, “tough”, and more.

Compared to the negative/serious words coded for, the happier, more humorous words were tallied for



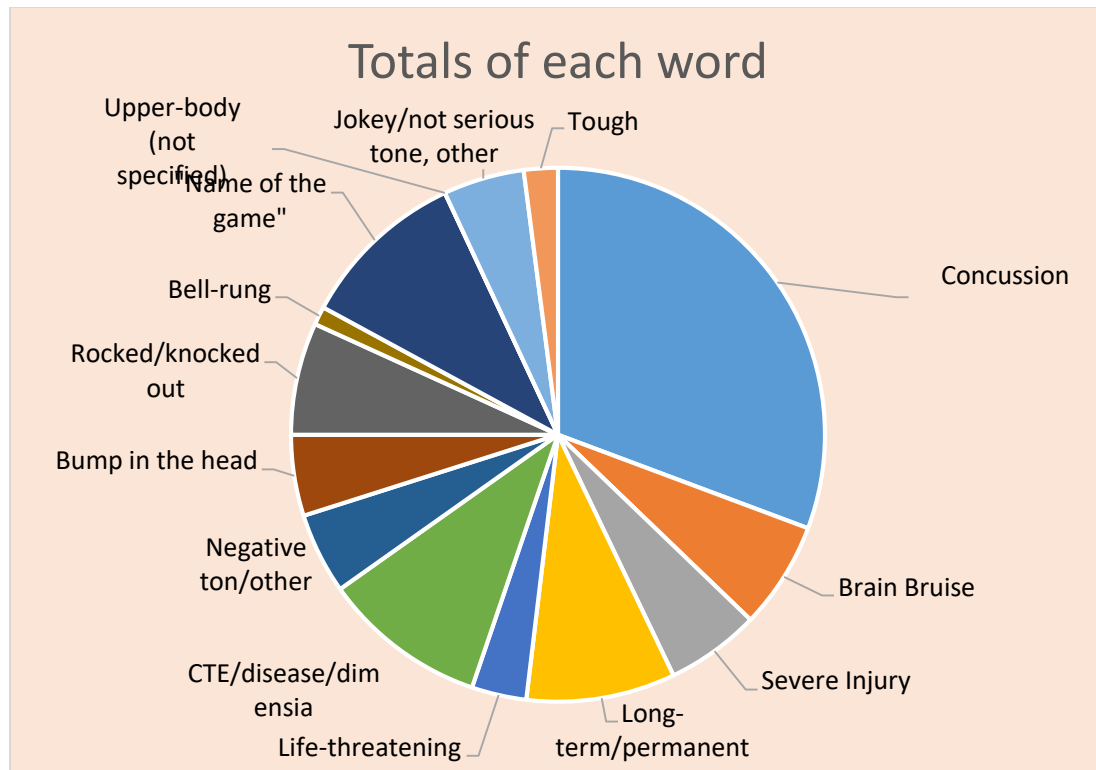
less. While it may outwardly seem like the positive and humorous words were included in the documentaries a lot less than the serious words, when removing concussion from the count the amount of positive and negative tones only differs by around 40 tallies. The table above shows the distribution of humorous words and tones in the overall documentary tallies. “Name of the game is shown as the word/phrase that was used the most among the documentaries. The complete information for which film received how many specific tallies for every tone and word is presented in the codebooks displayed in Appendix A.

Looking at Codebook two, it was found that scenarios were tallied for 419 times total. The scenario “athlete potentially concussed” was tallied for 227 times, which was the most out of all the scenarios. “Hiding or ignoring symptoms” was the second highest scenario recorded at 55 tallies. “Did not follow protocol” was third with 47 tallies. Three scenarios had no tally marks recorded, which were “overcautious in diagnosing”, “purposefully slow in recovery”, and “athlete’s first concussion”. The films that were watched varied in how many tallies occurred per move. Two movies both had 54 tally marks, which was the highest amount of tallies per

movie regarding the scenarios. The lowest amount of tallies per movie was five. Information regarding the specifics of which documentaries received which tallies is presented in the codebooks that are included in Appendix A.

DISCUSSION

The results presented in the codebooks after watching and coding for 15 documentaries presents interesting information about the way concussions are talked about in documentary film. All of the documentaries presented different information and takes on concussions and athletes of various levels. The one TV show watched was a Blue Mountain State episode titled “The C-Word” and reflected a fictional college football team’s process for when a player is suspected to have a concussion. While the episode is fictional, it was viewed and coded for because of the shows’ popularity among young athletes. While the show might have played up the jokiness surrounding concussions and following protocol, it still is a good example of something watched frequently that can contribute to the concussion dialogue. The show was watched in an effort for the researcher to gather background information on how athletes might be learning about concussions from fictional types of TV or film.

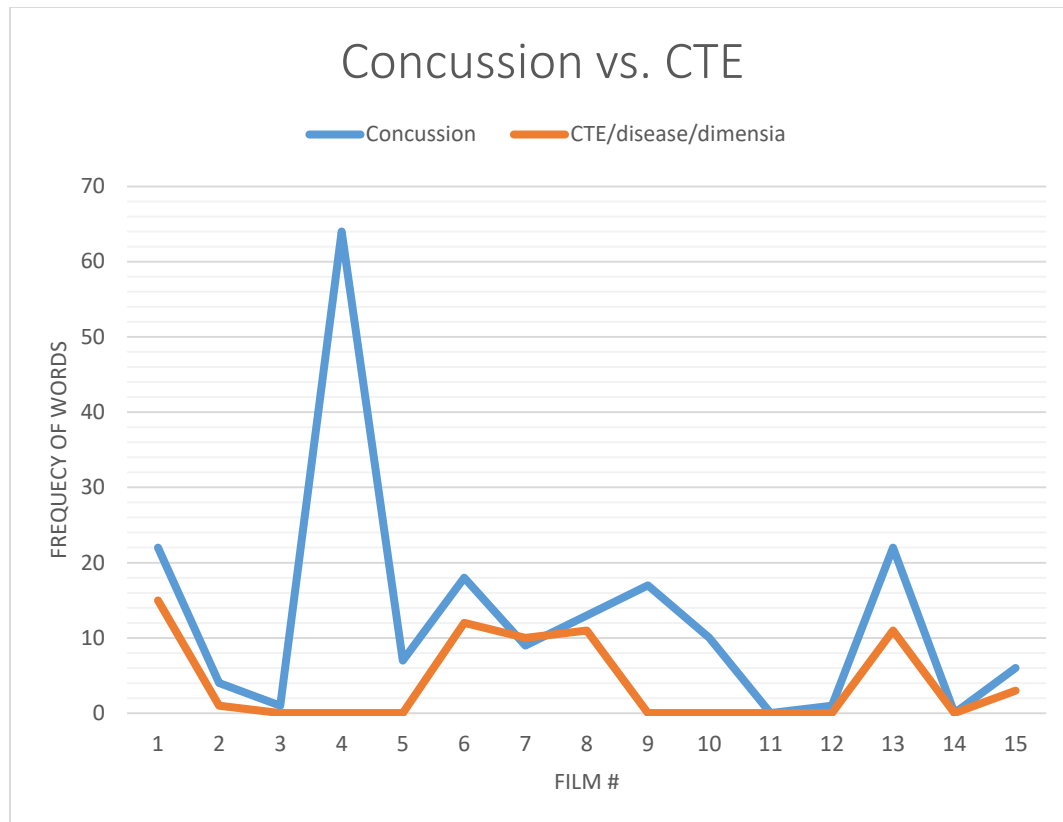


The chart above demonstrates the amount that each word was coded for comparatively in all of the documentaries. Regarding Codebook three and the specific concussion terminology that was coded for, it makes logical sense that the word most frequently coded for was “concussion”. One documentary alone said that word concussion 64 times, which was more than most of the other words were said at all. Concussions were looked at from both the lens of those who think people overreact about the concussion “crisis”, as well as those doctors and certain players who believe we need to worry more. What’s interesting is that when the actual word “concussion” was used most frequently to describe the head injury in a film, the more humorous terms and tones were used less, and when “concussion” was used less in a film the humorous terms were used more. A specific example of this is if you compare documentary seven to documentary four. In documentary seven, “concussion” was tallied nine times,

compared to 64 times in documentary four. In documentary seven, “rocked” was coded for nine times, “name of the game” was coded for 13 times, and “bump in the head” was coded for six times. For documentary four, these terms were coded for three, one, and five times respectively. This trend was common for almost every documentary, and speaks to the idea that films generally use consistently more humorous or more serious terms to describe concussions in their films, and do not really mix the tones that often. The type of words used when actually referring to concussions, as well as the tone, are important in conveying to the viewers the level of severity and seriousness in what is being discussed. If the viewer is seeing a father discussing his sons’ concussions in his football career, and the father is only referring to the head injury as his son getting his “bell-rung” or it being “the name of the game”, then the viewers will see the injury as less severe and more humorous. This research does in no way relate the way that concussions are discussed and coded for to the specific way it makes viewers think, but based on the research in the literature review and the past studies that have been conducted on media’s influence on our thoughts and behavior points to a relationship between the way health issues are discussed and the way in which people treat them. Taking this into consideration with concussions in documentaries, the idea that documentaries are currently pretty evenly split on if they refer to concussions in a serious manner versus as more of a joke, it can be further determined that those who watch documentaries as their way to gather information about concussions are taking a 50/50 chance in being informed about concussion in the proper, serious manner.

Within the serious words and tones specifically, the relationship between how many times “concussion” was coded for compared to “CTE” reveals another interesting piece of

information in how concussions are discussed differently even by those who take them seriously. Using the word concussion to describe a concussion is a standard and necessary choice for how to best portray the word. Concussion is not a highly confusing medical term, but is a word that most people recognize immediately because of its commonality and frequency in sports. Use of the word concussion is perceived as the most neutral way to talk about a concussion because while it is what is actually occurring to an individual, it is also not thought to describe the severity behind the injury. CTE, or Chronic Traumatic Encephalopathy, is a more medical sounding term that might not be as easy for the audience to understand. Using CTE to describe a head injury or repeated head injuries conveys the importance of respecting and treating the injury because it sounds more official and scary than referring to the injury as a concussion. Individual's hesitation to use "CTE" to when talking about concussions can be seen in the graph below:



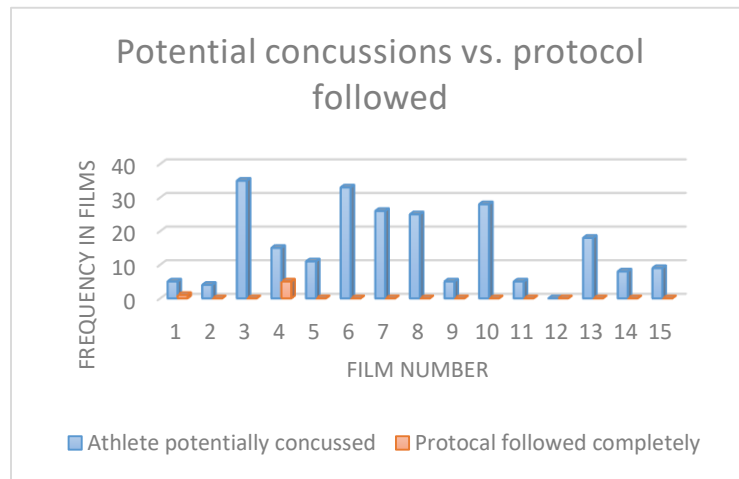
While there are specific films that had similar amounts of “CTE” and “concussion” coded within them, the clear spikes in the use of “concussion” display evidence of the use of “concussion” over a more serious and intense sounding term like “CTE”. The use of phrases like “life-threatening” and “severe injury” were also used surprisingly less than expected. The use of “concussion” in the films is to be expected because of what the films main topic of interest was, but the lower amounts of serious and words promoting severity were less than originally expected when coding the documentaries. This can convey a sense that filmmakers, as well as those who are concerned with concussions and making sure they are properly taught about may be afraid to convey their true severity because they do not want people to tune them out or think they are over reacting. It is important to note that while “CTE” was less than “concussion” in the documentaries, “CTE” was not a coined term until 2005, and was also not a

term common to the everyday person concerned with sports until around 2014-15 when the NFL came into the hot seat surrounding concussions. Due to this lack of “CTE” knowledge, it would be assumed that “CTE” would be present less than “concussion”, but not at the extreme levels demonstrated in the chart.

There is currently a trend in the world of concussions that those who are most concerned with the issue often overreact with the severity of the injury, and really the only people who are subject to true injury are those who play in the NFL or who play a contact sport for a living. While there may be concussion fanatics that exist and take the issue too far, it is incorrect to think that phrases such as “life-threatening” and “severe injury” are too dramatic. Even the films that received the highest amounts of “concussion” tallies were not the same films that had the higher levels of the other serious words and tones, which reveals a gap in the way we as individuals are learning about concussions through the most trusted sources of information.

Tone and word choice is important in these documentaries because of how it causes viewers to take away from certain beliefs from the film. Documentaries, as already stated, are trusted sources of information that usually take a longer amount of time to create and require completely factual information. Due to the fact that the genre of film is required to be factual, people who watch the documentaries put faith in the terms and tones that are used to describe the topic of the film. When looking at documentaries specifically created surrounding concussions, the terminology used is more often serious and not humorous, but the numbers are not that far apart from each other. There are also important gaps in the way that

concussions could be discussed more seriously, and influxes of information where concussions are discussed in humorous ways where they should not be. Talking about concussions in these ways only adds to our current imbalance and tension in the concussion world that currently exists.



Looking at the results for Codebook two, and when concussions presented themselves as well as how they were regarded and treated, it is interesting to look at the relationship between how many times a player was potentially

concussed in a documentary versus the amount of times the protocol was completely followed.

This table demonstrates the relationship between the amount of times an athlete was potentially concussed compared to the amount of times the concussion protocol was followed completely and accurately. The documentaries ranged from which sport they described, and each sport has there and/or league potentially has their own process for what happens when someone is potentially concussed. In terms of coding, and tally was given for “potential concussion” when a player was shown to receive a hit to their head in whatever sport they played. The hit to the head could be accompanied by a complaints of headaches, the player passing out, or the player being visually unstable. A tally was then given to the category “protocol followed” if the athlete was then checked out by a doctor, and did not continue to

play. As shown in the graph, the protocol for concussions was not followed even a fourth of the times it needed to be.

The subjects of the documentary did not always know they were being observed, and the trainers and coaches may not have been aware of the players being potentially concussed on their team. It is ultimately the responsibility of the player themselves to seek out medical treatment when they are feeling hurt, but the stigma surrounding concussions and the fact that you can not observe a concussion in any physical way makes it sometimes embarrassing or frustrating for a player to go to their coach with the injury. One of the major reasons behind players not reaching out for proper treatment for their concussions is because of the push back they get from those around them. There were instances in the documentaries of the coach, team, league, and parents of the athletes pressuring the athletes to hide their injury or to play before they were fully recovered. Pressure to play from the coach/team was coded for the most, 35 times, which represents a major issue in the world of concussions. Due to their hidden nature and how they occur without physical symptoms, players often are made to feel guilty or like wimps if they have to miss practices and games because of concussions. They feel the most pressure from their teammates and coaches because those are the people who would directly benefit from the player being able to play, and who might care more about the team winning than the player being healthy in the long run. It was surprising to see that there were also instances of pressure to play for parents, which shows how some athletes are really never taught or made aware of the dangers of head injuries from the people who are supposed to support them.

Another example of this lack of support and the athletes not following the correct healing process when they are faced with a head injury is the high number of tallies for instances where an athlete rushed back into play without following complete protocol, or when an athlete hid their symptoms. The number of tallies for athletes rushing back into play was 47 total, and for athletes hiding or ignoring their symptoms there was 55 tallies. These high numbers as well as the low numbers for players being overcautious with handling their head injury and for purposefully being slow in recovery continue to show how the norm for concussion treatment is to not take the proper time that you need to heal. This is what has led to the concussion crisis in sports because as players continue to follow the mentality that concussions are not serious enough to make them not play, or that having a concussion is something to hide from a team or coach, players will continue to suffer more detrimental hits while they are still experiencing concussion symptoms, which is what leads to CTE.

Showing concussions in this way also has an effect on the way viewers learn about concussions, and what is considered the norm with concussions. Even in the films where the negative toned words were used to refer to concussions, when individuals are shown the high numbers of players who ignore their symptoms, who have multiple concussions, and how do not follow their league's protocol for handling head injuries, it can be seen how the crisis continues to spread. It is definitely important to show people handling concussions incorrectly to convey the true issues with how concussions are handled, but for documentaries where concussions are not portrayed as a problem, to combine the humorous language with images of scenes of athletes not handling their concussions properly is further hurting the image of concussions that we need athletes to have. When images of protocol not being followed are

shown in a combined effort with the negative toned words, viewers will begin to understand the concussion crisis and what needs to change. When images of the protocol not being followed are shown, as well as humorous language used to describe concussions, the wrong message will be received by the viewers.

Qualitative research. Throughout the viewing of the documentaries there was also qualitative data documented through the form of notes. These notes were taken in an effort to keep track of the timeline of the concussion crisis, as well as record interesting and surprising facts and player's stories revolving around concussions. The documentaries told multiple stories of players whose lives were ruined because of their concussions, some so severely it resulted in premature death. One of the most common stories told is also considered the first known case of CTE, and the player it focuses on is Mike Webster. Webster was a lineman for the Pittsburgh Steelers, and suffered many concussions during his time in the NFL and before. Webster ultimately was said to have died from apparent suicide when he was only 50 years old, and Dr. Bennet Omalu eventually diagnosed the reasoning behind his death as CTE. Previously undiscovered, CTE was then looked for in other athletes who had died prematurely and were said to have changed dramatically physically and mentally in the years leading up to their death. Webster's story was similar to many of the stories described across the documentaries of players who had done MMA, played hockey or rugby, or had also played football. If individuals in the documentaries were talking about these players that had been found to have CTE after their deaths, their response to the players with CTE varied based on the individual's age.

If young players, from college-aged down, were talking about someone who had ended up with CTE as a result of playing their sport, they were more apt to refer to the players as crazy or more intense than them. When players who had played the sport for longer or were older in age and had maybe retired were to talk about players ending up with CTE, the conversation usually centered around the player's own experiences with head injuries, and if they are experiencing any of the symptoms that someone with CTE might have. This variance in how the players themselves talked about those in their sport in the past who suffered from CTE is a reflection of how age can play a role in how susceptible a player feels to having CTE, or an opportunity for potential education about concussions to help prevent CTE in the future. The opportunity to take what can be learned from how players refer to other players in documentaries is something that was concluded from qualitative data and is definitely an area with room for more research.

There were also interesting points brought up throughout the documentaries about the way the different leagues of major sports promote injuries, specifically head injuries. In the NFL specifically, big hits are celebrated by fans and players every game. The refs do not always punish players for making helmet to helmet contact, especially if neither player has to be checked out by medical staff at all. On post and pre-game shows, announcers celebrate the biggest hits and the players' injuries each week. Even the promos for different games show the animated helmets with the team's logos on them smashing into each other so hard that they explode. The NFL is a league centered around the violence that occurs between players, and instead of acknowledge the damage occurring in the long-run, they continue to ignore the connections to CTE. The NHL also has a strong culture of violent hits, player-on-player fist fights

being one of the main draws to the sport. Besides allowing the players to fist fight each other, the league has always been known for career ending injuries and players who are deemed the team's "enforcer", or person who is known to pick fights with other teams if they need to motivate their own team. The NHL has recently implemented rule changes, safer playing spaces in the form of padding on the boards and warning lines close to the boards, as well as less fighting permitted among the players. Both leagues, as well as many others are still focused on maintaining a violent culture to attract viewers and promote the masculinity of the players. It would take many changes to promote a new mindset towards concussions in these sports, but considering the growing amount of research on the subject of CTE, there may be change in the future of professional sports.

Other themes captured by the concussion coding and data collection involve the way athletes who are found to have CTE go through a deterioration process. It is most common for athletes who die young to have family members that suspect CTE was a contributing or leading factor due to the way the athlete changed close to their death. Extreme depression and mood/personality change are common among athletes with CTE, as well as physical deterioration of their bodies that make them look much older than they really are. In the case of Mike Webster, his physical presence matched that of a 70-year-old even though he had just turned 50 when he passed. These common symptoms among athletes are important to collect and make note of because they will help players who could be experiencing these symptoms be convinced to reach out and get help from a doctor. Players often assume that their painful post-playing years are a result of having played a sport for so long, when they actually are suffering

from an actual disease. While there is no current cure for CTE, seeking treatment and pain relief from doctors is better than the common other alternative of alcohol or undescribed drugs.

Errors

While the study was completed in a way that best account for potential errors or opportunities for biases towards the data, there were still potential for error in different levels of the research. One of the initial errors that is important to note is that the selection of what terms and situations to code for in Codebook One and Codebook Two were made by the researcher based on the initial research done in the literature review, as well as additional research in how concussions are communicated about in person with athletes in real-life and in other forms of media. There is potential that there are terms used to describe concussions in a positive or negative way that were not included in the codebook and could have provided additional information about how concussions are communicated about. While the codebooks might change based on who the creator is and what their past experiences are, I do believe there are a set group of words, phrases, and situations that would be used across the board.

Another potential error could have occurred with the selection of the documentaries that were watched. If given the proper time and financial resources, it would have been ideal and more accurate to select documentaries evenly based on which sports they discuss, what countries they come from, what age group they are directed towards, and if they are directly meant to focus on concussions or if concussions just happen to be a part of the documentary. This would account for proper studying of multiple independent variables that were unknown at the beginning of this project. Selecting documentaries that are both created purposefully

talking about concussions, as well as those that include concussion aspects but are not completely about them is important because if the subjects of the documentaries know they are being asked about concussions specifically, they may slant their answers to sound more careful or caring than they actually are.

There also is opportunity for error in the coding of the documentaries itself. While there was extreme caution taken during the coding process to make sure that no words or scenarios were missed, the coding was still done with potential for human error or bias. There is opportunity for future studies where researchers view the same documentaries and code using the same, or different, codebooks to see if the same conclusions are drawn. I do not believe there is enough potential error that this is needed, and that it is more important for new research to be done so that the knowledge of concussions communication can further grow.

CONCLUSION

The study was conducted in a way that provided a qualitative and quantitative results on the way that concussions are communicated about in documentary film. There were results found that were both expected and unexpected, but that most important takeaway from the study is the truth in the research. The study was conducted on documentaries, which are required to be non-fiction, true representations of what is occurring in the world. The information collected about concussions is factual, true representation of how athletes, parents, coaches, leagues, and anyone involved in sports discussion concussions and the impending threat of CTE in their real lives. The choice to use documentaries as opposed to TV, fiction movies, or different forms of news as the median of studying concussions was

intentional because of the implications behind the true data that is collected. Conducting a study on documentaries removes the middle step of having to relate what is said to how it might actually be conveyed in the real-world. Looking at documentaries allowed for the research to be analyzed in a serious way, and for the results to be connected to how we are currently talking about concussions and trying to prevent them among athletes.

After gaining so much information about concussions, how they're communicated about, and how athletes suffer from CTE even when it is preventable at some level has made me think about different ways that sports can be adapted or changed. In no way do I think that sports, even the most violent, should be terminated or no longer allowed. Sports are a huge part of the US and world culture, allowing for communities, states, and countries to unite in a way that can not be created by anything else. Sports also consist of huge, billion dollar industries that employ too many people for there ever to be a complete removal of any kind. I also do not think that sports should be removed because of the violence culture and high injury rate. Instead, I think that there is important opportunity for sports to be made safer for the players, both in rules implemented, gear created, and a mentality shift. As shown through hockey and the NFL, creating rules specifically protecting player's heads and penalizing players who hurt other's in the head is one potentially successful way to help prevent concussions. There also are opportunities for better gear and technology to be used to help prevent concussions, or detect them quicker. The NFL has implemented rules requiring teams to have staff doctors who are specifically searching for potential head injuries during the games, which has allowed them to try and detect more injuries. Preventing the players from ignoring or hiding their injuries through the use of in-game technology is a vital portion of concussion

prevention. Relying on players self-reporting their injuries is not currently working, but spotting players who are subject to head injuries is one example of helping prevent concussions and long-term damage through technology and better allocation of money. Besides rules, gear, and other tactical parts of the game that can change surrounding concussion prevention, there needs to be an overall shift in the way we think about concussions as injuries. Acknowledging that concussion, even though they are not visible, are detrimental injuries to your brain and therefore to your function in life is a step that everyone involved in sports needs to take. There cannot be pressure from anyone involved to hide a head injury because it is not physically present. We need to start putting our brains first in sports, because without them we will not function at all.

Concussion research and CTE knowledge may seem stuck in a rut of being ignored and continuing to ruin athletes lives every day, but the amazing work of the Boston University CTE center is helping change what the future of concussions look like. In the past six months they have released information about being able to test for beginning signs of CTE in players' heads that are still alive. This major breakthrough would allow athletes to test if they have varying or abnormal levels of certain proteins in their brain fluid that they would not normally have at their age, which could affect how they handle themselves in the future. If players suspected that they could have CTE, or be subject to it through any means, being able to perform the test/surgery to see if you are showing signs could help athletes decide to remove themselves from sports before it is too late. While there are athletes that would continue to play and would not want to know if they are going to get CTE in the future, these tests could change the lives of athletes and their families that would otherwise be devastated by the effects of CTE and

multiple concussions. It has even been suggested that all athletes should get the test done when they start a sport in college or at the professional level so that they can compare their results every year, or so that they can test for CTE even if they do not think there is a chance at all that they have the disease. This technology amazes and intrigues me, and gives me hope that there is a future where CTE can be prevented or treated instead of leading to ultimate death for athletes.

Through analyzing concussions and how they are communicated about in documentary film, it can be seen that there are many different trends in how concussions are mentioned and displayed for viewers. These messages effect the way the audience thinks about a serious health condition, and in order to make sure athletes are taking care of themselves and not returning to play too soon following head injuries, there needs to be better communication about the severity of damaging your head. There is opportunity in the future to replicate this study in the form of other types of media, as well as using a differently developed codebook to look at the same documentaries as before. Concussion research is ultimately lacking compared to how prevalent and deadly head injuries are, so it is the hope that this study will positively add to the field of work that already exists.

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Appendix A: Codebooks

Codebook One – Collecting data on the specific documentaries watched

Codebook 1

Film #	Name of film	Date of release	Who made film? (comp, background, intention)	Plot	Length	Length watched	Type of film	Sport/activity	Source
1	"League of Denial: The NFL's Concussion Crisis"	Oct 8, 2013	Fathomline	Investigation of NFL's concussion crisis	1hr 55m	entire	Doc.	Football / NFL	Source: PBS.org or can open
2	"The Brain Part of Denial: Don't Die Yet"	2007	BBC	into video summarization brain structure, function, but looks at what happens to brain when you're injured	30 min	entire	Doc.	rugby	nanoppy
3	"Undrafted"	2011	Spiffire Pictures	undrafted college football players from Michigan on a road trip to find a team	1hr 53m		sport doc.	Football	Netflix
4	"Concussions: an American Athlete's Story"	July 20, 2015	Tucker Center in University of Minnesota	investigation of concussion in sports, is on male sports, sports doc looks specifically at football athletes	56 min	entire	doc		Youtube
5	"The Cleveland Browns' Story"	11/15/2011	Wondacare	Main char. gets concussion, team leader hides it	21m 36s	entire	TV show	Football	Netflix
6	"Concussion"	Dec 24, 2015	Sony	Follows story of Dr. Bennett	2hr 2m	entire	movie	Football	Youtube
7	"Punched Out: The Death of Derek Boerger"	May 13, 2011	New York Times	what led to his death, intentions w/ fan + friends	36 min	entire	doc.	hockey	New York Times
8	"Head Games"	Nov 19, 2008	Ricardo Canalela	Discussion of concussions in CFL	45 min	23 min	doc	Football	CBC Player
9	"Concussion: A Silent Epidemic"	2010	The National	The story of concussions in Canadian policy	10 min	entire	news report	hockey	Sport Concussion Library
10	"League of Denial: The NFL's Concussion Crisis"	2011		Focuses on coach, players + what sport means for team	44 min	entire	doc	Football	Documentary films can

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Film #	name of film	Date of film	Plot	who made film?	length?	length watched?	Type of film	Sport	Source
11	Nerd F.C. Season 1 Ep. 4	Jan 15, 2015	'Nerd' retreats to house; team is reluctant to go to prison but playing prison games	Squad's productivity device in Australia	24 min 32 sec	entire	documentary	soccer	youtube
12	Healing Agent's Concussed	2012	Follows Greg McElroy from NFL	Reposter media group	18 min	entire	doc	football	kanopi
13	Head Games	2012	Concussion in sports	Major David's film	1hr 31min	entire	doc	all sports	youtube
14	1	2013	How concussions in football changed lives of players	Diamond Docs	1hr 52 min	entire	doc	football	Amazon
15	Shocked: The Hidden Facts in the Sports Concussion Crisis	2018	How equipment & safety used to change in NFL - Brett Finkle	Stadium	20min 54 sec	entire	doc	football	youtube

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Codebook Two – Concussion scenarios and how individuals react to them

Codebook 2

Film #	Athlete potentially concussed	Overcautious in diagnosing	Hiding/ symptoms	Pressure to play from coach/ team	Pressure to play from team/ coach	Pressure to play from parents	Protocol followed completely	Rushed back into play, don't follow protocol	Purposeful/ slow in recovery	Athletes' first concussion/ new to them	Multiple concussions before / experience
1				1			1				
2								1			
3				1			1				
4											
5					1		1				
6					1						
7					1						
8					1						
9					1						
10					1						
11				1			1				
12			1	1			1				
13				1							
14				1							
15											

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Codebook Three – Concussion terminology and tones

Codebook 3

Film #	Concussion	Brain bruise/ AVC/contusion	Severe injury	Long-term permanence	Life- threatening	CTE/ Alzheimer's dementia	Negative tone/other	Bump/in the head	Rocked/ knocked out	Bell-rung	"Name of the game"	Upper- body (not specify)	Joke/not serious tone, other
1													
2													
3													
4													
5													
6													
7													
8													
9													
10													
11													
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