Brain Bugs: An Infestation of Pressures to Perform Among Pre-College Student Athletes

A thesis presented to
the faculty of
The Honors Tutorial College of Ohio University

In partial fulfillment
of the requirements for the degree
Bachelor of Science in Neuroscience

Corey A. Hayes
April 2017
© 2017 Corey A Hayes. All Rights Reserved.
This thesis has been approved by:

The Honors Tutorial College and the Department of Biological Sciences

Dr. Jacob O. Okumu
Coordinator for Student Outreach and Developmental Services, OMSAR
Thesis Adviser

Dr. Janet Duerr
Director of Studies, Neuroscience

Dr. Jeremy Webster
Dean, Honors Tutorial College
Table of Contents

List of Tables .................................................................................................................. 6
List of Figures .................................................................................................................... 7
Abstract ............................................................................................................................ 8
Dedication .......................................................................................................................... 9
Acknowledgments ............................................................................................................ 10
Chapter 1: Introduction .................................................................................................... 12
  Background ..................................................................................................................... 12
  Definition ...................................................................................................................... 12
  Clinical Signs and Symptoms of a Concussion ............................................................... 13
  Biomechanical Considerations ..................................................................................... 14
  Diagnostic Evaluation ................................................................................................... 15
  Concussion Management ............................................................................................. 15
  Recovery ....................................................................................................................... 16
  Second Impact Syndrome ............................................................................................ 16
  Chronic Traumatic Encephalopathy (CTE) .................................................................. 17
  Biology of a Concussion ............................................................................................... 18
  Youth and Concussions ............................................................................................... 20
  Gender and Concussions ............................................................................................. 20
  Concussion Symptom-Hiding ...................................................................................... 20
  Meaning-Making Dynamics ......................................................................................... 22
  Research Questions ...................................................................................................... 22
  Statement of Purpose ................................................................................................. 23
Chapter 2: Methodology ................................................................................................. 24
  Subjects ......................................................................................................................... 24
  Informed Consent .......................................................................................................... 25
  Procedural Overview .................................................................................................... 25
  Analysis .......................................................................................................................... 26
Interview Protocol

Anticipated Benefits for Participants

Anticipated Benefits for Society and the Scientific Community

Chapter 3: Case-By-Case Analysis

Overview

Recruitment of Participants

Subject Population

Survey Analysis

Case-By-Case Analysis: Participants’ Meaning-Making Synopses

Middle School Participants

  Fuerte

  Espíritu

  Luchador

  Disciplinado

High School Participants

  Aprensivo

  Guerrero

  Socorro

  Hermano

  Soñador

  Competidor

Chapter 4: Theme Identification

Cross-Case Analysis

Global Analysis: All Participants

Motivators for Athletic Participation

Life Lessons

Psychosocial Epistemological Conceptualization of Concussion

Concussion Symptomology
List of Tables

Table 1.1: Common Signs and Symptoms of Concussion.........................................................14
Table 1.2: Return-to-Play Protocol........................................................................................16
Table 4.1: Motivators for Sport and Life Lessons Learned..................................................131
Table 4.2: Self-Conceptualization of Concussion.................................................................137
Table 4.3: Understood Symptomology of Concussion.............................................................138
Table 4.4: Middle School - Rationale for Symptom-Hiding.................................................139
Table 4.5: Middle School - Incidence of Symptom-Hiding....................................................143
Table 4.6: Middle School – Team Conceptualization of Concussion....................................144
Table 4.7: Middle School – Extent of Concussion Education..............................................145
Table 4.8: High School - Rationale for Symptom-Hiding.......................................................147
Table 4.9: High School - Incidence of Symptom-Hiding.........................................................153
Table 4.10: High School – Team Conceptualization of Concussion......................................154
Table 4.11: High School – Extent of Concussion Education..................................................156
List of Figures

Figure 1.1: Second-Impact Syndrome.................................................................17
Figure 2.1: Grounded Theory Processes.............................................................27
Abstract

Although 1.6-3.8 million sports-related concussions are diagnosed annually (CDC, 2016), a number of potential concussions may not be self-reported and disclosed to clinicians, coaches and other supervising adults in sport. With concussion symptom-hiding continuing to pervade athletics at all levels, the obvious question to pose would be: why are student athletes hiding such serious symptoms and putting their lives at risk?

This qualitative study aims at developing grounded theoretical conceptualizations of the dynamics and components of meaning making as experienced by pre-college (middle and high school) student athletes relative to the concussion phenomenon. Such an understanding will: (1) allow student athletes to claim the authority of their own experiences, liberate themselves from the potentially negative constraints of influencing individuals and their past experiences, and self-author their unique paths as they explore their sports careers and (2) inform necessary improvements to current concussion education, identification, management and conceptualization by listening to the story of the student athlete.
Dedication

To the 10 student athletes who so bravely and openly shared their stories of concussion in sport;

this is your voice!
Acknowledgments

I would first like to thank the 10 student athletes who so willingly and openly shared their experiences with concussions in sport. You have provided the research community with the one voice that has failed to be heard in concussion research for far too long: the voice of the student athlete.

Dr. Jacob Okumu --- you have believed in me from day one, long before I learned to believe in myself. You have inspired me to grow from a passive dreamer with big goals and ambitions to an active dreamer actually living out the goals I have set before myself. You have continually challenged me to reach beyond what I thought to be possible and have given new life to the mantra: anything is possible. Even more, you have empowered me to grow in all facets of my life, and I believe such dynamism is the cornerstone for self-discovery and self-improvement.

Dr. Janet Duerr --- thank you for being so encouraging of my dreams and ambitions since the day I stepped foot on campus. When I presented the idea of doing an original, non-traditional, qualitative research venture, you so graciously supported me and have been behind me every step of the way, especially during the lows and various medical roadblocks. I have also really appreciated your continued challenge of me to prioritize and reevaluate my over involvement in extracurricular activities, research and work obligations that has often left me feeling deplete and stressed with no time for myself.

My family --- a big thank you to my parents, Barry and Karen, and my brother, Cameron, for your unconditional love and support. I am deeply grateful for your unwavering patience and presence at my side every step of the way on my own journey with six concussions and a traumatic brain injury to my concussion research journey. Thank you for always celebrating my successes and being my strongest support system when I have been faced with incredible adversity.
Dr. Jeremy Webster, Dr. Cary Frith, and Ohio University’s Honors Tutorial College --- I am forever grateful for you and the sphere you have provided me to achieve beyond what I had previously believed to be in the realm of attainability. Additionally, I would like to express my sincerest gratitude for your financial support via the HTC Research and Travel Grant that allowed me to recruit as many participants as I did and thus enrich the diversity of experiences shared.

OMSAR staff --- Thank you to my OMSAR family for always being so willing to provide me with the opportunities, connections and guidance necessary to turn my crazy big dreams into realities!
CHAPTER 1: INTRODUCTION

Background

Sports-related concussions have garnered extensive media attention in the past decade with a growing number of focused research initiatives investigating the epidemiology and pathophysiology of the injury as well as the uncertainty of lifelong effects. The Center for Disease Control and Prevention (CDC) estimates that between 1.6 million and 3.8 million sports-related brain injuries occur in the United States every year (CDC, 2016). Moreover, within the last decade, concussion-related visits to the emergency room for student athletes between the ages of eight and 13 have doubled, while concussion-related visits to the ER for athletes between the ages of 14 and 19 have tripled (CDC, 2016). These values fail to even consider visits to family doctors or sports medicine physicians (CDC, 2016).

Definition

Although many sports-related injuries have a standard and consistent clinical presentation, finding a universal definition and diagnostic criteria for concussions has been challenging for researchers and medical professionals alike. A variety of evaluative grading scales have been used to determine whether a concussion has occurred; however, these lacked consistency and standardization (Clark & Guskiewicz, 2016). To overcome this problem, an International Conference on Concussion in Sport (ISCC) was designed to formally define a concussion and recommend its management. In the latest ISCC consensus statement from 2012, a “concussion” is recognized as a complex pathophysiological injury to the brain engendered by biomechanical forces (McCrory et al., 2013).

Diagnostically, the ISCC determined five major features of a concussive episode: (1) the impact may consist of a direct blow to the head, neck or face or result from an indirect hit to another region of the body; (2) most short-term mitigation of neurological functioning from a
Concussion arises quickly and is relieved spontaneously, but some symptoms arise slowly and can take minutes to hours to be observed; (3) concussions have the potential for inducing neuropathological changes in the brain; however, the injury largely presents as a functional rather than a structural disruption and may fail to appear on structurally-focused neuroimaging studies; (4) concussion symptoms vary in severity and may or may not include a loss of consciousness; and (5) the recovery period is generally sequential and short-lived, but some individuals may experience symptoms for longer periods of time (McCrory et al., 2013). As a result of the unique manifestation of the injury in each case, the ISCC failed to provide a specific and standard clinical presentation.

**Clinical Signs and Symptoms of a Concussion**

Based upon numerous analyses, the most universal signs and symptoms of a concussion fall into one of four interrelated categories: (1) physical; (2) cognitive; (3) emotional; and (4) sleep-related (Makdissi et al., 2010; Meehan et al., 2010; McCrory et al., 2013; Eisenberg et al., 2014). Although Table 1.1 provides a substantive, thematic-based listing of common concussion symptoms, it is not all-encompassing. Each concussion presents in a manner that is unique to the individual, and correspondingly, concussions can manifest in ways that differ from this list.
<table>
<thead>
<tr>
<th>Physical</th>
<th>Cognitive</th>
<th>Emotional</th>
<th>Sleep-Related</th>
</tr>
</thead>
<tbody>
<tr>
<td>Headache</td>
<td>Loss of consciousness</td>
<td>Irritability</td>
<td>Difficulty falling asleep</td>
</tr>
<tr>
<td>Dizziness</td>
<td>Post-traumatic amnesia</td>
<td>Emotional lability</td>
<td>Sleeping more or less than usual</td>
</tr>
<tr>
<td>Nausea</td>
<td>Difficulty concentrating</td>
<td>Depressed mood</td>
<td>Drowsiness</td>
</tr>
<tr>
<td>Vomiting</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Balance problems</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fatigue</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 1.1. Common Signs and Symptoms of Concussion. From Clark & Guskiewicz, 2016.

**Biomechanical Considerations**

Direct impacts to the head, face or neck as well as indirect impacts to other regions of the body can produce sufficient linear and rotational head accelerations to increase one’s risk of concussion. Indirect impacts largely result in a whiplash effect, whereby the initial direction of motion is abruptly halted (Clark & Guskiewicz, 2016). Resultant linear and rotational accelerations may damage brain tissue through a coup or contrecoup mechanism of contact with the surrounding skull. Coup injuries incite brain damage directly below the location of impact; contrecoup damage results from the brain making contact with the skull opposite the side of the blow. Even more serious, coup-contrecoup injuries incur damage to both sides of the brain, directly beneath the point of impact and from the brain striking the opposite side of the skull (Young et al., 2015).

While all head impact forces cannot be entirely dissipated, some individuals appear to reduce head accelerations much better than others. These individuals who demonstrated greater force reductions possessed enhanced cervical muscle stiffness and angular displacement rather than neck muscle strength and size (Mihalik et al., 2011; Schmidt et al., 2014). More studies need to be conducted to confirm this notion; however, recent developments suggest muscle stiffness is rewarded more than muscle strength in terms of reducing concussion probability.
Diagnostic Evaluation

If a concussion is suspected, the athlete should be immediately removed from the sport and promptly assessed by a licensed health care professional. The medical professional must: (1) decide if emergency neuroimaging is required to rule out hemorrhage, skull fractures, and spinal injuries; (2) collect a detailed history and symptomology report from the athlete; (3) conduct an objective neuropsychological/neurocognitive/balance control exam; (4) monitor the individual for progressive neurological decline; and (5) decide if the injury constitutes a concussion, and if so, generate a recovery protocol (McCrory et al., 2013).

Concussion Management

The 2012 ISCC consensus was that no athlete who has sustained a concussion should ever return to play within the same day in which the concussion occurred. Instead, a graduated return-to-play protocol should be followed to allow for adequate rest and recovery. Once an athlete is asymptomatic with rest for 24 hours, he or she can enter the return protocol. Essentially, the athlete will slowly build back to game readiness by progressing through a series of less stressful exercise. The athlete may advance to the next rehabilitation stage (Table 1.2) if, and only if, he or she is asymptomatic for 24 hours following the functional exercise requirement for each protocol stage. If an athlete redevelops any concussion symptoms within 24 hours following one of the functional exercises, he or she will return to the last asymptomatic rehabilitation stage and try again after 24 hours of rest (McCrory et al., 2013).
Recovery

The typical (80-90%) concussion resolves within seven to 10 days post-injury. However, given the variability of the injury, symptoms may last beyond this timeframe, particularly among individuals still in the critical period of development (McCrory et al., 2013).

Second-Impact Syndrome

Concussion identification and diagnosis allows an individual to begin a path toward recovery that consists of rest and removal from sport. If a concussion goes undiagnosed, one runs the risk of sustaining a second, consecutive concussion too quickly. If a second concussive blow is sustained, one may experience extensive cerebral edema and an increased risk for mortality. In Figure 1.1, the computed tomography (CT) scan shows the sequential progression of diffuse cerebral swelling, evidenced by the growing fluid (in white) surrounding the brain tissue (in gray).

<table>
<thead>
<tr>
<th>Rehabilitation Stage</th>
<th>Functional Exercise at Each Stage of Rehabilitation</th>
<th>Objective(s) of Each Stage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. No activity</td>
<td>Symptom-limited physical and cognitive rest</td>
<td>Recovery</td>
</tr>
<tr>
<td>2. Light aerobic exercise</td>
<td>Walking, swimming, or stationary cycling, keeping intensity &lt;70% of maximum permitted heart rate; no resistance training</td>
<td>Increase heart rate</td>
</tr>
<tr>
<td>3. Sport specific exercise</td>
<td>Skating drills in ice hockey, running drills in soccer; no head-impact activities</td>
<td>Add movement</td>
</tr>
<tr>
<td>4. Noncontact training drills</td>
<td>Progression to more complex training drills, eg, passing drills in football and ice hockey; may start progressive resistance training</td>
<td>Exercise, coordination, and cognitive load</td>
</tr>
<tr>
<td>5. Full-contact practice</td>
<td>After medical clearance, participation in normal training activities</td>
<td>Restore confidence and assessment of functional skills by coaching staff</td>
</tr>
<tr>
<td>Return to play</td>
<td>Normal game play</td>
<td></td>
</tr>
</tbody>
</table>

Table 1.2. Graduated Return-to-Play Protocol for Student Athletes. From McCrory et al., 2013.
Chronic Traumatic Encephalopathy (CTE)

Repetitive concussive and sub-concussive blows may yield an increased risk for long-term development of chronic traumatic encephalopathy (CTE), a neurodegenerative disorder. Postmortem analyses of boxers and NFL football players suspected of having CTE have pervaded the news in recent years (McKee et al., 2009). Confirmed cases of CTE postmortem via pathologic diagnosis have allowed researchers to retrogradely assess the lives of these individuals and propose a potential symptomology and pathophysiology of the disorder. The neuropsychological and neurocognitive decline associated with CTE are hypothesized to be progressive in nature and possibly unnoticeable until many years post-injury. The disorder, which can only be accurately diagnosed posthumously, is suspected of causing severe depression, emotional irritability, excessive aggression, and significant cognitive impairments and dysfunction; however, the symptomology is quite variable in presentation (Perrine et al., 2017). Similarly, much debate surrounds the specific pathophysiological manifestations of the disorder, but many suggest the presence of perivascular p-tau and neurofibrillary tangles,
cerebral atrophy, marked reductions in brain weight, depigmentation of the locus coeruleus and substantia nigra, and septal abnormalities to be common (Perrine et al., 2017).

**Biology of Concussions**

**NEUROMETABOLIC CASCADE**

Identifying the biological and pathophysiological manifestations of a concussion in the brain has been a growing field of research. Various animal models have illuminated a probable neurochemical and neurometabolic cascade that occurs acutely post-injury; however, it is unclear as to how accurately this cascade translates to the human brain.

Using Sprague Dawley rats as a model for experimentation, Farkas et al. (2006) discovered that sheering and straining forces on the neuron due to a concussive blow disrupt the ionic balance across the neuronal membrane, leading to irregular ionic movement. Specifically, potassium ions move out of the cell and into the extracellular space, and internal calcium levels may increase leading to the release of a variety of excitatory neurotransmitters, particularly glutamate (Barkhoudarian et al., 2011). Such an efflux results in depolarization that may cause extensive suppression of neuronal activity consistent with spreading depression, an electrophysiological phenomenon characterized by cyclical waves of hyperactivity and inhibition that can lead to edema and pain (Barkhoudarian et al., 2011).

Due to the resultant ionic imbalance, the ATP-dependent Na\(^+\) / K\(^+\) pump must be activated to restore the adequate ionic dispersion across the membrane (Barkhoudarian et al., 2011). Increased demand for ATP depletes glucose energy stores and may lead to increased lactate production due to anaerobic respiration (Barkhoudarian et al., 2011). Lactate can yield localized acidosis and increased risk of cerebral edema (Barkhoudarian et al., 2011).
DIFFUSE AXONAL INJURY

In addition to changes in neurofilament compaction, ionic balances may occur. These may interrupt axonal transport and thus cause axonal blebbing and even disconnection. Such connective disruptions are thought to be the underpinnings for many of the somatic symptoms of a concussion (Barkhoudarian et al., 2011).

NEUROINFLAMMATION

The aforementioned pathophysiological manifestation of a concussion triggers the recruitment of localized and peripheral immune cells to provide for an inflammatory response. Reactive oxygen species, purines, alarmins, and signals from damage-associated molecular patterns provoke a rapid immune response due to a localized increase in cytokine and chemokine production (Corps et al., 2015; Russo & McGavern, 2016). Resident microglia and macrophages first respond to the site(s) of injury to initiate phagocytic removal of damaged or dying cells (Corps et al., 2015; Russo & McGavern, 2016). Then, neutrophils and monocytes are believed to be recruited to prepare the damaged site for repair as well as to participate in phagocytosis in damaged meningeal spaces (Corps et al., 2015; Russo & McGavern, 2016).

FUNCTIONAL DISRUPTIONS

Neuroimaging studies of concussions have elucidated some visual representations of concussive effects in the brain; however, clinicians and researchers remain unable to diagnose a concussion solely from advanced neuroimaging. For example, routine magnetic resonance imaging (MRI) and computerized tomography (CT) generally read “normal” for concussed athletes, suggesting a higher level of functional rather than structural distress post-injury or that the size of the injury is below the resolution limit (Davis et al., 2009).
Youth and Concussions

Young children and teenagers prove the most vulnerable to a concussive injury because of weaker neck strength and a disproportionately large head and brain compared to the rest of the body (Broglio et al., 2009). Such physical traits prevent adequate bracing and illustrate why rotational forces sustained by a child are greater relative to the severity of the impact (Broglio et al., 2009). Moreover, because of the undeveloped nature of a child’s brain, the severity of a concussion’s effects on healthy brain development must also be considered (Giza & Hovda, 2001).

Gender and Concussions

Although collision sports like football and ice hockey dominate the concussion dialogue, all sports may pose a concussion risk for both male and female participants. Contrary to societal expectation, high school and college female student athletes are sustaining more concussions in soccer and basketball than their male counterparts (Langlois et al., 2006). Female soccer players sustain more concussions than in any other sport besides football (Langlois et al., 2006). The bias generated by societal gender constructs results in more concussions being missed in females during the diagnosis process (Langlois et al., 2006).

Concussion Symptom-Hiding

A major concern in sports medicine is the number of potential concussions that fail to be self-reported and disclosed to clinicians, coaches, and other supervising adults in sport. This is especially true due to the potential for second-impact syndrome and the dangers of continuing to play symptomatic from a first concussion. In an investigation of concussion-reporting behaviors among high school athletes, Register-Mihalik et al. (2013) found that just 40% of self-perceived concussion episodes were reported and assessed for diagnosis. Similarly, in a multi-centered
cross-sectional study, Meehan et al. (2013) discovered that 30.5% of middle school and high school patients diagnosed with a concussion at two major sport concussion clinics had sustained at least one previous concussion that had gone undiagnosed. Moreover, a study of Canadian hockey players aged 11 to 17 found that concussion rates were 100 times greater than the actual number reported to youth hockey authorities (Williamson & Goodman, 2006).

Student athletes represent the primary source for concussion identification, as they can choose to share their symptoms with an athletic trainer, coach, or physician. From headaches and irritability to dizziness and sensitivity to light and sound, many concussion symptoms are subjective, requiring an unwavering honesty on the part of the student athlete. If student athletes remain uneducated about concussions, concussion symptoms, and the risks of playing with a concussion, the underreporting of concussions and withholding of concussion symptoms from medical professionals will continue to be influential in the epidemic’s progression. As student athletes give medical professionals the best insight into the lingering effects of a concussion, education must become a priority to provide for appropriate diagnosis and management of the injury.

With concussion symptom-hiding continuing in athletics at all levels, the obvious question to pose would be: why is this occurring (McCrea et al., 2004)? Why are student athletes hiding such serious symptoms and putting their lives at risk? To answer this question, one must consider the psyche of the student athlete and how they choose to make meaning of a concussive episode. Kerr et al. (2016) found that in former collegiate athletes, the major reasons for nondisclosure were: not wanting to leave the game and let the team down, lack of awareness that their injury experience constituted a concussion, and believing the injury was non-serious. These
observations were prompted using a rigid, quantitative survey. Would the results have differed if the athletes were able to tell their self-authored stories freely via qualitative means?

Moreover, how do middle school and high school athletes conceptualize and make meaning of their concussion experience? What roles do they see their schools, guardians/parents, coaches and sports medical professionals playing in this experience? What can we do to alleviate the lack of reporting, which may impede healthy development among student athletes and jeopardizes their well-being? Thus, this study explores the qualitative meaning-making dynamics and motivators behind concussion symptom-hiding among pre-college student athletes.

**Meaning-Making Dynamics**

The developmental process of meaning-making entails working towards constructing and integrating different parts of one’s life experiences so that they are congruent with one’s view of oneself, others, and the world (Parks, 2011). Meaning-making entails the processes by which individuals endeavor to make sense of, internally identify, evaluate, construct and integrate their sense of self, their personal knowledge and values, and their interactions with others as well as with the external world without losing their internal distinct personal identities, (Baxter Magolda, 1998, 2001, 2004; Kegan, 1982, 1994; Okumu, 2014; Pizzolato, 2003, 2004, 2005).

**Research Questions**

Conducted from a student development epistemological theoretical foundation, and informed by a constructivist grounded theory methodology, the following research questions guided this study:

(1) How do pre-college student athletes make meaning of the phenomenon and experience of sports-related concussions during their middle/high school football careers?
(2) What role do pre-college student athletes see their coaches, parents, guardians, physicians, and themselves playing in this process?

Statement of Purpose

This study focused on pre-college (middle school and high school) football players enrolled in select urban, suburban, and rural school districts and their distinct understanding and experiences. The basic assumption is that every student athlete is unique and brings an equally distinct perspective and significant set of developmental experiences to sports. Such significant and unique experiences shared by the pre-college student athletes will inform the direction of concussion reform in the United States and aid in the development of a specific concussion education program for each competition level (middle school, high school, etc.), geared to addressing that level’s experimentally-determined reasons for possible premature return-to-play and symptom-hiding.
CHAPTER 2: METHODOLOGY

Subjects

Subjects were recruited from various rural, urban, and suburban school districts in the Midwest region of the United States through their teachers, coaches, teammates, parents, and guardians. Emails were sent to the school’s principal, athletic director, and coaching staff to request permission for recruiting players on the football team (Appendix A). Football was chosen as the sport of focus due to the high incidence of concussions in this sport (Kerr et al., 2016). The research participants were recruited from player lists provided by the schools using a purposeful and theoretical sampling technique (i.e. snowballing; see Appendix G) consistent with grounded theory methodology (Marshall, 1996). Participants helped to identify and recruit future participants by informing these acquaintances about the opportunity to involve themselves in the study (Goodman, 1961). Research participants consisting of middle school and high school football players from the targeted school districts. Participants initially participated through an online survey that investigated previous possible concussion experiences and the participant’s perceived understanding of their injury. Ten subjects who stated in the survey that they had sustained or thought they may have sustained a concussion were examined further through one-on-one follow-up interviews based on their responses and consistent with grounded theory methodology. The follow-up interviews allowed for common themes to be identified in the responses and provided anecdotal support of the quantitative data. To gain maximum variation and gather rich description of experiences, the participants ranged as much as possible based on a limited cohort in grade level, age, and ethnic background.
Informed Consent

The consent occurred before any survey or individual interview took place via email correspondence. Participants were identified from the school’s administration (Appendix A), and associated approval was attained prior to email correspondence. Identified participants received an email with both the explanation of the study and the required consent forms (Appendices B, C, and D), to review and respond with any arising questions. The participants and their parents or guardians were reminded that their participation was voluntary and that they were free to withdraw from the study at any time. For permission to be attained, both the parental and minor consent forms had to be signed and returned to the investigators via email with the documentation submitted into confidential records for proof of permission.

Procedural Overview

This study employed a constructivist-grounded theory (defined by Appendix G) research design (Charmaz, 2006). Data was collected using an online survey with follow-up through in-depth personal interviews. Students and their parents (if minors) were required to provide consent prior to involvement in the study (Appendices B, C, and D). A survey protocol for concussions in football adapted from Delaney et al. (2015) was used for the initial anonymous online survey (Appendix H). Follow-up interviews ranged from 30 to 60 minutes, varied for each participant, and focused on emerging common themes across cases. Interviews either: (1) took place on the Ohio University campus in a conference room in Alden Library or (2) those who could not travel to the Athens campus participated via a Skype© video interview. Parents or guardians were not present for the interview due to possible influence bias. The in-person follow-up interview questions were used to ensure that both the researcher and research participants were able to review the research analysis together to ensure congruence of emerging
themes and findings. Compensation was provided to the participants and their families for travel expenses (i.e. gas money) and voluntary participation. Students who participated in the initial survey were awarded a $5 Amazon gift card upon completion. Additionally, participants who participated in the follow-up interview were awarded an additional $10 Amazon gift card. Pre-paid Visa cards were also provided with amounts awarded based on distance traveled.

Analysis

The initial survey data was analyzed to determine if participants met the inclusion criteria of either having been diagnosed with a concussion or believing they had sustained a concussion but never had it examined. Moreover, qualitative analysis of the follow-up interviews was consistent with the grounded theory research paradigm (Figure 2.1). This study applied open, selective, and theoretical coding (defined by Appendix G) by way of probing concepts that are (a) indicating what the research data is revealing, (b) describing categories the data presents, and (c) delineating emerging themes at play (Glaser & Strauss, 1967, Glaser 1978, Strauss & Corbin, 1998).

Next, the coding results were categorized into meaning units to reflect different experiences (Bachelor, 1995, Rennie, 2006). Each meaning unit was compared to an existing theme or larger coding category. Whenever the meaning unit failed to fit well into any existing theme, a new one was established. Each meaning unit from each participant was then classified as an “initial primary theme” throughout data analysis (Glaser & Strauss, 1967). Initial primary themes from each participant formed a second tier of cross-case analysis among research participants that elucidated broader core themes (Glaser, 1978; Glaser & Strauss, 1967, Strauss & Corbin, 1998). The final analysis consisted of comparing core themes across cases to construct a theoretical representation of the data (Patton, 2002).
Figure 2.1. Grounded theory processes used in analysis. From Okumu, 2014.

**Interview Protocol**

1.) Introduction: Thank research participant for coming, and review consent form.

2.) Building rapport and establishing interview purpose.

3.) Highlight consent and confidentiality; may refuse to answer questions not comfortable in answering.

4.) Confirm interview end time.

5.) Review interview procedure and purpose of interview.

a. The purpose of this interview is to explore your willingness or unwillingness to timely report concussion symptoms, what your own concussion experience(s) has been like, and the role you perceive your school and home environment play in either fostering or inhibiting your personal and professional life goals and aspirations as a student athlete.

6.) Share with me about your experience in sports from the time you started playing
to now.

7.) Why have you chosen to play sports?

8.) What have you learned about yourself and/or life through sports?

9.) Do you have goals of continuing to play sports in high school/college?

10.) Define the word “concussion.”

11.) List as many symptoms of a concussion that you can think of.

12.) Have you ever sustained and been diagnosed with a concussion either in practice or during a game while participating in sports?

a. If yes, how many diagnosed concussions have you endured throughout your sports career?

   i. What have these concussion experiences been like for you?

      1. Recovery?

      2. Short-term/Long-term effects?

      3. What have you learned?

      4. Has this experience changed the way you approach the game?

13.) Have you ever knowingly hidden concussion symptoms after sustaining a knock to your head or neck during a sporting event?

   i. If so, why in that moment did you choose to hide your symptoms?

14.) If faced with a head injury, do you feel supported and encouraged to tell your coach, athletic training staff, teammates, and/or parents?
The following questions I will ask are more general questions about your team and perception of concussions.

15.) Have you ever experienced a teammate knowingly hide and/or lie about their concussion symptoms? If so, how did you react?

16.) How often do you believe athletes knowingly hide their concussion symptoms?

17.) What do you think is the number one factor contributing to why an athlete would choose to not report their concussion symptoms? Why?

18.) What is the general perception of concussions as a sports injury on your football team?

19.) Does your team have an education program about concussions that you have to go through before the season starts?

20.) Are there any other observations or comments you would like to share?

21.) Debrief participant and schedule time to review their quotes for possible use in publication.

Note: Follow-up questions were determined by the researcher based upon the responses given by the subject over the course of the interview. All student athletes were asked to provide suggestions for how to decrease concussion symptom-hiding in their designated competition level (middle or high school) to end each interview.

Anticipated Benefits for Participants

Individual participants may benefit from this study by having an opportunity to reflect upon, clarify, and process their injury experience(s) and how they make sense of their personal and professional life as a student athlete. Participants and their families may also choose to
review and discuss available concussion education documents generated by the researcher after participation. Education documents will be geared toward providing detailed information about how everyone plays a role in concussion safety and diagnosis (e.g. parents, coaches, medical professionals, etc.).

**Anticipated Benefits for Society and the Scientific Community**

Although agility, teamwork, and other life lesson skills can be learned through sports-related activities, student athletes should be protected, and concussions should be prevented as much as possible. While concussions cannot be entirely removed from athletics, brain damage can be minimized if players are prevented from having a concussion too quickly on the heels of a previous one (Dessy et al., 2015). This puts a lot of responsibility into the hands of the athletes to be proactive and honest in reporting any symptoms they are experiencing after sustaining a possible concussive blow. Investigating the psyche of the student athlete and the influential factors that affect their willingness to report their concussion symptoms will inform the necessary improvements to current concussion education programming.

This research also hopes to provide a theoretical base that will aid sports student affairs and sports medicine professionals equip student athletes at different levels of their athletic careers with the empowering potential of self-authored meaning-making abilities. These abilities will allow the student athletes to “claim the authority of their own experiences, liberate themselves from the potentially negative constraints of influencing individuals and their past experiences, and finally, self-author their unique paths” as they explore their future athletic involvements (Okumu, 2014).
For that reason, this study was aimed at developing grounded theoretical conceptualizations of the dynamics and components of meaning-making as experienced by the pre-college student athletes relative to the concussion phenomenon (Okumu, 2014). Such an understanding will provide student athletes and other stakeholders in sports “with additional resources and tools to help in formulating systems of meanings that help inform their quest for an integral sense of identity and purpose as they engage” their future sports careers (Okumu, 2014).

Through a constructivist developmental approach, this research explored the complexities of sports-related concussions among pre-college student athletes experiences and investigated how different ways of understanding those experiences influence their development process of meaning-making (defined by Appendix G) and life decisions.
CHAPTER 3: CASE-BY-CASE ANALYSIS

Overview

This study aimed to expand the concussion discourse by exploring the meaning-making dynamics and motivators behind concussion symptom-hiding and premature return-to-play among pre-college student athletes. As every student athlete is unique and brings an equally distinct perspective and significant set of developmental experiences to sports, the study prioritized self-authorship and fostered an investigative format whereby the athletes could freely share their personal concussion experiences. Conducted from a psychosocial, epistemological foundation and informed by the notion that how an individual develops and makes meaning of life experiences impacts the way he or she interacts with the world, the following research questions guided this study:

(1) How do pre-college student athletes make meaning of the phenomenon and experience of sports-related concussions during their middle/high school football careers?

(2) What role do pre-college student athletes see their coaches, parents, guardians, physicians, and themselves playing in this process?

The following chapter will delineate the most relevant themes to answer the aforementioned research questions through a quantitative analysis of the Qualtrics survey in addition to a qualitative analysis of the 10 interviews via case-by-case and cross-case analyses.

Recruitment of Participants

Rural, urban, and suburban school districts in the Midwest region of the United States were contacted regarding possible participation in this research endeavor. Of the school districts that accepted the request for participation, football-participating student athletes and their parents were notified via email by the school’s principal and/or athletic director (Appendix A). Twelve students (and their parents, for minors) stated their intention to participate, with snowballing
being a primary means of recruitment; however, only 10 students fully completed the permission
documents and initial survey. All 10 students who completed the survey agreed to the optional
post-survey interview.

Subject Population

Of the 10 student athletes who completed the survey and subsequent interview, six
indicated that they were finishing their senior year of high school (age 18) and four indicated they were completing their eighth grade year of middle school (age 13). All ten participants self-
identified as White, and one also self-identified as Hispanic. Four of the athletes stated they were from suburban school districts, three from urban school districts, and three from rural school
districts. Participants varied in the number of years they had played football as well position on
the field, although linebacker seemed to be the most played position.

Survey Analysis

The primary rationale for inclusion of the Qualtrics survey adapted from Delaney et al.
(2015) was to allow participants the opportunity to reflect on previous concussion experiences
and share their personal conception of concussion in sport. The survey identified which
participants had sustained a medically diagnosed concussion as well as those who believed they may have sustained a concussion but failed to come forward with their symptoms, both inclusion
criteria for interview recruitment. In addition to use as a recruitment tool, the responses to the
questions asked within the survey informed possible follow-up questions to ask during the
interview process. Of the 10 participants, five responded “yes” to the survey question: “Have you
ever been told that you had a concussion?” The other five participants achieved the inclusion
criteria of having believed they had sustained a concussion by listing various reasons for their
symptom-hiding at the time of injury.
Case-By-Case Analysis: Participants’ Meaning-Making Synopses

In analyzing the interview transcripts for all participants, a subject meaning-making synopsis was generated (via open coding) by examining each case or interview independent of the others. Each meaning-making synopsis presents a co-constructed interpretation of each athlete’s personal experiences in sport and with concussion. Congruent with constructivist grounded theory (defined by Appendix G), the researcher was an intrinsic part of the research process in working with the research participants to co-construct meaning, rather than taking on the role of an objective onlooker. As such, the reader must be aware that the researcher’s values and beliefs (see Chapter 6) inevitably permeate the following case studies and the overall research outcomes (Mills, 2006).
MIDDLE SCHOOL PARTICIPANTS

FUERTE:

Athletic Background and Concussion Profile

Subject Profile

Fuerte is a 13-year-old student athlete who self-identified as White. He recently completed his eighth grade season as the starting free safety for his suburban middle school football team in the Midwest region of the United States.

Motivations for Athletic Involvement

From a young age, sports have always been an outlet for Fuerte. His parents introduced him to soccer at the age of four because “he had too much energy that needed to be expended.” Soccer allowed him the ability to run around and stay in condition physically; however, the increased physicality and aggression in football was very attractive. Thus, at the age of 10, he made the switch from soccer to football and has played football ever since. In describing his motivations for involving himself in these sports, he offers:

When I began playing sports, it was mostly due to my parents introducing me to an activity where I could run around and get rid of all my excess energy. But, after that, I started having a lot of fun playing sports. I met all of my best friends through soccer and football. And sports allow me to stay in shape and release my frustrations and anger from school.

Seeing sports as a necessary outlet for bottled up frustrations and stress induced by school, Fuerte suggested that he will most definitely continue playing football at the high school level. He mentions:
I will 100% be playing football in high school. Football is my outlet, and so as long as I can make the team, I will definitely keep playing.

*Personal Understanding of Concussions as a Sports Injury*

After only suffering a few minor injuries to his legs from soccer, *Fuerte* never expected football to affect him differently; however, that all changed during his first season playing football. He anecdotally provides:

> When I was in fifth grade, I suffered a concussion during our first round playoff football game. I tried to save a touchdown by launching my body at the other team’s running back. Instead of hitting him low, my head hit his head, and my head snapped back. I don’t remember much after that other than my mom and my dad standing over me and taking me to urgent care.

*Fuerte’s* recovery was rather quick and straightforward. He shares:

> I didn’t miss any school and since we lost the game I got my concussion, I didn’t end up missing any football. I rested for two or three days and went back to doing everything I normally did.

Acutely, *Fuerte* dealt with a week-long spell of headaches, sleep disturbances, and memory dysfunction. Although these short-term effects dissipated with rest, he has battled the long-term manifestation of migraines. He recounts:

> For a week after the injury, I had some bad headaches, couldn’t fall asleep and couldn’t think as well when I was at school. Since then, I have experienced migraines periodically but nothing else really.
As the first one on his team to be diagnosed with a concussion from football, *Fuerte* struggled with subsequent bullying for an external perception of weakness. Despite the lack of support from his peers, he learned about the intrinsic power of personal strength, especially when challenged. Additionally, he realized the falsity of his perception of invincibility and that concussions can happen to anyone. He reflects:

I learned that concussions are scary and can happen to anyone. Before I got hit, no one on my team had ever thought that a concussion could happen to them. So it made things real. I also learned that even though some of my teammates made fun of me for having a concussion and being weak, I know I am strong and can persevere in tough times.

As a result of his concussion experience and the initial bullying he faced, *Fuerte* developed an unhealthy mentality of needing to fight through the pain to appear strong. But after further consideration, he processed the need for self-advocacy and technique adjustments. He remarks:

Immediately after the concussion, I thought I had to fight harder through pain because I knew if I came out with another one I would be bullied by my classmates. But since, I have tried to be more careful when playing and never lead with my head when tackling.

Based upon his own firsthand experience, *Fuerte* has come to understand and personally define a concussion as “a blow to the head that can lead to fatal head injuries” with possible symptoms to include: “bad headaches, feeling dizzy and blacking out.”
Life Lessons and Sport

Perseverance in the Face of Adversity

When asked to consider what he has learned about life through sport, Fuerte expressed the opportunity for learning how to persevere when faced with adverse situations in sport as in life. Due to concerns over how his concussion would affect his ability to make open-field tackles as the team’s starting safety, the coaches decided to limit Fuerte’s playing time and remove him from the starting lineup for the beginning of his sixth grade season. Despite this setback, he made a conscious effort to outwork everyone else on his team and earn his keep as the team’s starting safety. He imparts:

I learned how to overcome obstacles that get in the way and persevere. After my concussion in fifth grade, I lost my spot in the starting lineup heading into the middle school team. I worked harder than ever in practice and would even practice on our off days with my dad to get better and get my position back. At the end of my sixth grade season, I finally got my position back, and I have kept it ever since.

Interpersonal Relationships and Team Dynamics

Additionally, Fuerte stated that he has learned through sport how to optimally work within a group, even when conflict arises. He shared that he has learned how to prioritize the team’s successes over his own personal frustrations. He notes:

I have also learned how to work on a team, even when I don’t get along with some of my teammates. It’s best to worry about the team’s mission.
Rationale for Symptom-Hiding

After fully recovering from his concussion experience, Fuerte reported that on several occasions he had chosen to hide his concussion symptoms believing that the symptoms would just resolve themselves in a matter of time. He confesses:

A couple of times I got hit in the head and acted like everything was okay because I knew I would just get better on my own.

External Perceptions of Walking Away from the Fight

Fuerte acknowledged a strong urge to keep his symptoms private to avoid the bullying and name-calling from his teammates and coaches that would almost certainly accompany disclosure. He admits:

I mainly didn’t tell anyone about my symptoms because I didn’t want to get made fun of for being weak and a crybaby who goes to his parents when he gets hit.

Possible Loss of Playing Time and Starting Position

Moreover, Fuerte emphasized the worry that reporting his symptoms to anybody, especially his coaches, would jeopardize and threaten his starting position and in-game minutes. He declares:

I also didn’t want to stop being a starter on defense and miss any of the playing time that I deserved.

Lack of Teammate, Medical Staff and Coach Support

Despite feeling comfortable in honestly communicating with his parents about injuries, Fuerte highlighted the lack of trust in talking with his coaching staff or teammates about his possible concussion experiences. He sensed a lack of concern on the part of the coaches and anticipated
bullying from his peers if he were to sit out of sport with a concussion. He also described an ease with which the symptoms could be hidden due to the lack of medical personnel presence on the sidelines. He clarifies:

    We do not have an athletic trainer or team doctor at my school, so it’s really up to us to tell our coaches or parents. My coaches don’t really care because they just want to win. But my parents know a lot about medical stuff, so I know I can always tell them anything. I also know my teammates will just make fun of me if I tell them anything is wrong.

**Team Perception of Concussions as a Sports Injury**

*Incidence of Occurrence*

From his own experience and through observations of the level of physicality on the field, Fuerte anticipates that the majority of student athletes sustain at least one concussion a sports season that remains undiagnosed. He emphasizes:

    I believe most athletes have a concussion at least once every sports season because of how competitive and physical things get on the field.

Despite this predicted statistic, Fuerte claims to have never seen any of his own teammates hide concussion symptoms due to the team culture surrounding the perception of concussions. To that effect, he states:

    I haven’t seen any of my teammates ever hide concussion symptoms. If they chose to hide their symptoms, they would have hidden it from everyone because it would be embarrassing to tell other kids on our team.
Fuerte elaborated on a team culture whereby the athletes and coaches isolate and ridicule those who have sustained an injury, particularly a concussion. He reveals:

You don’t want others to think you are weak and can’t fight through the pain. On our team, you are definitely not treated well if you get injured, and the coaches kind of forget about you until you are fully healthy again.

Similarly, because of the negative stigma regarding concussion sustenance on his team, team members choose silence and non-disclosure on matters concerning concussions rather than open dialogue and possible public mockery. He proposes:

My team never talks about concussions. Nobody on my team suspects they will ever get a concussion or that it’s impossible for any of us to get one. If someone were to have one, they are seen as weak because they can’t take a hit so it’s embarrassing to talk about if you have one or have had one.

Concussion Education

Fuerte denoted that his middle school does not have a structured education program about concussions and does not even provide education materials. He asserted that the only information he knows about concussions is what he has been taught secondhand from his parents. To that end, he divulges:

I have only learned about concussions from what my parents have taught me. Our team doesn’t even have an athletic trainer or team doctor. Some of the parents of kids on my team are doctors so they are the ones that can tell if we need to get checked. But, no I only know what my parents say about concussions.
Implications for Practice

Given his familiarity with concussions on his own football team, Fuerte acknowledged the immediate need for medical personnel on the sidelines to catch more concussions when they happen as well as an education initiative that preaches severity and the non-discriminative nature of concussions. He concludes:

I know resources are not always there, but we really need to have medical people on the sidelines to be on the lookout for concussions, because the coaches and fans are so focused on the game that it comes down to us to have to stop playing and tell someone about what happened if we don’t feel right after a bad hit. I also think we need to be more educated about how serious it is and that it can happen to any of us.
**Espíritu:**

**Athletic Background and Concussion Profile**

**Subject Profile**

*Espíritu* is a 13-year-old eighth grader who self-identified as White. He has played football for his suburban middle school team in the Midwest region of the United States for the past three years.

**Motivations for Athletic Involvement**

*Espíritu* started playing sports from an early age; however, due to his parents’ concerns about possible injury, he was limited to playing recreational league soccer and baseball. Although he enjoyed playing soccer and baseball, he yearned for the competition and physicality associated with the football he would watch on TV every weekend with his father. Thus, at the age of 10 and entering fifth grade, his parents decided to let him play for his school team, and he has played ever since.

Motivations for *Espíritu*’s involvement in sports have stemmed from a desire to stay in condition and to be physically fit as well as the unique bonding opportunity he has been able to share with his father, his number one fan. He also explained his perception of sport as an outlet from his school life. He provides:

> I have played sports because they have allowed my dad and me to grow closer in our relationship and because sports keep you physically active and fit. I also like doing sports to have something else to think about than just school all the time. It’s like an outlet from my school life.
Espíritu asserted that he will definitely be trying out for the high school football team, because he needs the structure and outlet of sport in his life. He suggests:

I need sports in my life. I will for sure be trying out for the high school’s football team next fall. Hopefully, I will make it, because I’m not too sure what I’d do without it.

Personal Understanding of Concussions as a Sports Injury

Although never having been medically diagnosed with a concussion, Espíritu revealed that he has probably sustained a concussion without reporting his symptoms “at least a couple of times.” From these experiences, he has personally conceptualized a concussion as “a mild or it can be an extreme head injury that comes from collisions” and leads to symptoms such as: “headaches, feeling dizzy, trouble thinking or remembering what happened.”

Life Lessons and Sport

Interpersonal Relationships and Team Dynamics

Through sport, Espíritu acknowledged that because football is a team sport, he has learned about team dynamics and how working together to succeed can translate to one’s own life. He shares:

I have learned how to be a part of a team and how to work as a team to succeed.

Overcoming Adversity

Additionally, Espíritu presented the notion that sports force one to learn how to cope with and overcome adversity. He noted that when faced with an obstacle, one must learn the discipline to move forward. To that end, he imparts:
I would also say I have learned a lot about overcoming obstacles. In sports, you get injured, you make a bad play, you lose a big game, you lose minutes in the game. You begin to learn how to overcome these obstacles by working harder and harder than before and learning how to like move forward.

Rationale for Symptom-Hiding

Lack of Return on Investment

In reflecting on why he chose to withhold his concussion symptoms, Espíritu expressed the fear that disclosing his symptoms would possibly lead to missing the entire football season. The threat of practicing twice a day (two-a-days) in the summer and early fall and not being able to play in the big games was too much of a risk to take. He worries:

I was afraid that I could miss the entire season if I told someone about how I was feeling. Like you work so hard doing two-a-days and stuff that your whole season could end in an instant. All that work would go to waste.

External Perceptions of Walking Away from the Fight

Furthermore, Espíritu considered the potentially negative image of self he would create by reporting his symptoms. He stated that his masculinity would be called into question by coming out of the game with concussion symptoms instead of fighting through them. He adds:

Also, you definitely didn’t want others to think you couldn’t shake off the big hits. I didn’t want people to think I was weak and not manly enough.
Lack of Support from Coaches and Teammates

Espíritu also indicated a lack of support from his coaches and peers as a major reason for keeping his symptoms to himself. He confided that he felt safe and well-received in telling his parents about his injuries; however, his coaches and teammates seemed to dismiss anyone who let the team down by walking away from the fight. He also provided that his team lacked an athletic trainer or medical professional on the sideline to talk to. He mentions:

I would say I can always talk to my parents. They are awesome and so easy to talk to. They are also super worried about me getting injured that they would make sure to ask how I felt after every game and practice. But, my coaches and my teammates look down upon you if you come off the field with an injury because you are letting the team down if you can’t go back in. We also don’t have athletic trainers or people like that to talk to.

Team Perception of Concussions as a Sports Injury

Incidence of Occurrence

Through observations of reporting behaviors on his own team, Espíritu predicted concussion symptom-hiding to be a common occurrence. Specifically, he speculates:

I would say symptoms are hidden quite often. Like I would say most of team have had one and just never got it checked out.
**Team Silence on Concussions**

Similarly, *Espíritu* noted that he has yet to witness a teammate purposely hide concussion symptoms to stay in the game; however, he also provided that the team culture is one that prioritizes privatism. To that effect, he offers:

Never. I think everybody knows to keep things to themselves if they can and then tell their parents or something later on. But, no I haven’t seen any of my teammates hide symptoms on purpose.

In addition to not reporting concussion symptoms, *Espíritu* conceded that his team fails to participate in dialogue about concussions at all. This seems to be because no individual on his teams has ever been diagnosed with a concussion; resultantly, the team has adopted a mindset of invincibility and belief that a concussion will never happen to one of them. He clarifies:

Well we just don’t talk about concussions. I don’t think any of us think it can happen to us since we haven’t had anybody get one, so we just kind of push it aside and not worry about it happening.

**Concussion Education**

*Espíritu* asserted that his team has never received formal concussion education during his four years of playing football for his school. He has instead only come to learn about concussions secondhand through his parents due to their intense concern about the injury. He insists:

We don’t have any education like that. Since my parents are pretty worried about concussions, they have taught me about some of the symptoms and stuff. But I have never been taught about them in school or from my coaches or anything.
Implications for Practice

Considering possible changes to improve the reporting of concussions in middle school football, Espíritu suggested the need for a medical presence on the sideline to diminish the ease with which concussions can slip through the cracks. He also provided the need for coaches to communicate their concern for the injury and for concussion education to emphasize that a concussion can happen to anyone. He encourages:

I think we need medical people on the sideline to look for concussions and give us someone to talk to other than the coaches who are worried about the game and next play. I also think we do need to be educated about concussions and be told that it can happen to us. It would also be great for the coaches to care a lot more about them and be easier to talk to about injuries.
LUCHADOR:

Athletic Background and Concussion Profile

Subject Profile

Luchador is a 13-year-old student athlete who self-identified as White. He just finished his eighth grade football season, where he played cornerback for his suburban middle school team in the Midwest region of the United States.

Motivations for Athletic Involvement

As soon as he could walk, Luchador was kicking a soccer ball around the house. His parents introduced him to soccer at such an early age because of their own passion for the sport. As he grew up, he developed more and more his own passion for the sport, as he could play soccer year-round for both his school and his club team, and the sport afforded him the ability to release his pent-up energy. Throughout his early elementary school years, he attempted to play baseball, basketball, and track and field, but he shared, “I couldn’t get into those because I couldn’t really hit people and make tackles.” To fulfill this desire for physical interaction, Luchador decided to try his hand at football in third grade. Football immediately seemed to satisfy his hunger for physicality; thus, he has continued to participate ever since.

He suggested that sports have provided him a sphere where he has become more culturally aware by meeting people both similar and different from himself. Similarly, Luchador offered his conceptualization of sports as an outlet from the stress of academia. He supports:

I love the physical activity of sports, and since I play some sport all year, I am constantly in shape. I also like sports because I have gotten to know people from all over the world and learn about people different than me. My soccer coach is
from Jamaica, and several of my teammates are from Ghana and Jordan. Sports also give me a break from thinking about school all the time and that stress.

Because of the inherent value he has assigned to sport and in perceiving sports as intrinsically tied to his personal identity, Luchador reported his desire to continue playing sports at the high school level. To that end, he asserts:

I haven’t decided which sports I will play in high school, but I am thinking I will play football in the fall and club soccer in the spring so that I can keep playing something year-round. I can’t imagine not having sports in my schedule.

*Personal Understanding of Concussions as a Sports Injury*

Among other injuries sustained through sport, Luchador revealed that he had suffered two concussions one day apart while playing football. He recounts:

I have had two concussions in middle school, one right after the other. I tried to make a big hit on the other team’s best player and my head snapped back and then bounced off the ground. I felt kind of weird after and my head hurt, but I kept playing. Then, in practice after school, the next day, I hit my head pretty hard into the tackling dummy and my vision got really blurry. I called my parents to pick me up and the doctor we saw said that I had had two concussions in two days.

As a result of sustaining two concussions back-to-back and the probable second-impact syndrome, Luchador’s symptoms failed to improve within the typical 7-10 day recovery period. Instead, he developed post-concussion syndrome and endured a recovery period of roughly five or six months. He explains:
I missed a few days of school and then had to sit out all spring from soccer because my headaches wouldn’t go away. I finally got better during the summer so that I could play football again this year.

In the short term, Luchador noticed a decline in academic performance due to memory difficulties as well as constant headache pain. Post-recovery and more long-term, he revealed that he still suffers inconsistent headaches because of the concussions. He reflects:

Yes, I had really bad headaches for like five months and I didn’t do as well in school because my memory wasn’t working as well. Since then, I just get headaches sometimes.

Since the concussions, Luchador acknowledged a persisting concern for sustaining another concussion, and because of this, he is more strategic in thinking before acting on the field. With that being said, his competitive spirit still propels him to maintain his physicality and make the big tackles. He suggests:

I definitely worry about getting another concussion, so I think a lot more before I decide to do something on the field. But at the same time, I still like getting physical and making the big tackles.

From his concussive experiences, Luchador has come to realize the façade of invincibility and the severity of the injury. He interprets:

I learned that I am not a superhero. I never thought I would get injured like this, but then it happened. I also learned how serious concussions are and that I cannot get another one.
Because of his own interactions with concussions, *Luchador* conceptualizes a concussion as an injury that occurs “when you get hit hard in the head and your brain gets injured” with associating symptoms consisting of: “feeling dizzy, headaches, and throwing up.”

**Life Lessons and Sport**

*Interpersonal Relationships and Team Dynamics*

Reflecting on the broader value of sport, *Luchador* explained how he has grown in cultural awareness and competence through his interactions with teammates over the past several years. He clarifies:

I also like sports because I have gotten to know people from all over the world and learn about people different than me. My soccer coach is from Jamaica, and several of my teammates are from Ghana and Jordan.

Similarly, he provided that he has also learned from sport about the value of togetherness and what can be achieved when individuals *choose to* work together. He mentions: “I have learned how to work with so many different people to get the job done and succeed together.”

*Importance of Support Network*

Additionally, *Luchador* denoted the importance of having a strong support system of individuals in one’s life to overcome the hard times and share in the good times. He presents:

I have also learned how important it is to have other people in your life who can help you through the difficult times. My mom had breast cancer when I was in fifth grade and my teammates all supported me through that and they even bought pink jerseys to wear to support my family.
Rationale for Symptom-Hiding

*Luchador* disclosed that he has hidden concussion symptoms twice in his athletic career, both times coming after his diagnosed concussion experiences.

Fear of Missing Playing Time/Burden of Recovery

In discussing the reasons for hiding his possible concussion symptoms, *Luchador* offered his fear of missing more playing time after missing an entire spring sports season and part of his summer to recover from his two diagnosed concussions. Additionally, he admitted a concern about the burden of recovery and the isolation he felt during this healing process. To that effect, he comments:

> The recovery from the first two concussions was so long, and I felt so alone that I didn’t want to miss any more time, especially right before beginning high school next year.

External Perceptions of Walking Away from the Fight

Additionally, another consideration was the external perception of self that would accompany the reporting of his symptoms. After a traumatic experience where his coach called him names in front of the team, *Luchador* feared a similar personal attack if he came forward with his symptoms. He emotionally declares:

> I also didn’t want people to think I was weak and couldn’t handle the physicality.
> After my first concussions and missing so much, my coach embarrassed me in front of the team and called me a wuss.
Lack of Support from Coaches/Lack of Medical Staff

Identifying a lack of support from his coaching staff and potential bullying, *Luchador* noted his feeling uncomfortable in communicating with his coaches. Also, the lack of a medical staff (athletic trainers, team doctor, etc.) puts the identification and subsequent reporting of concussions into the hands of the athlete and supervising adults. *Luchador* did exclaim that he feels the most support from his parents because of their encouragement of open communication. He explicates:

> My parents have always been my biggest supporters, so I know I can always go to them. But my football coaches, I do not feel like I can tell them I am injured or else I will be made fun of, and they’ll think I am too weak to play. We also don’t have medical people at my school, so we have to be the ones to report our injuries.

Team Perception of Concussions as a Sports Injury

Incidence of Occurrence

Observing his own team over the past several seasons, *Luchador* speculated that concussion symptom-hiding “happens a lot more than it should.”

Team Conceptualization

*Luchador* maintains that he has never witnessed a teammate of his purposely hide concussion symptoms; however, he reported that after his coach’s personal attack of his own character following his concussion, everyone on the team has remained private on all injury matters. To that end, he concedes:
I have never seen any of my teammates hide symptoms. I was the first one on my team to get a concussion, and after our coach called me names, everybody kept all their injuries to themselves and their parents so I am sure they did but I couldn’t tell.

Similarly, *Luchador* explained a team atmosphere that has prioritized silence on any concussion discussion for fear of external perception. Specifically, he mentions:

> We don’t really talk about concussions. I think after what I went through, my teammates now realize it could happen to them too. But it’s not something we bring up because we don’t want people to think we are weak and not a real football player.

**Concussion Education**

*Luchador* noted that in his elementary and middle school athletic participation, he has never received concussion education in any form of presentation from his school administrators or coaches. He stated that the only information he has absorbed about concussions is through conversations with his doctors during his own injuries. He imparts:

> We do not have any education program. I only know about concussions from what the doctor told me when I got diagnosed and from what my parents have told me, but our coaches don’t talk about them at all, and our school doesn’t require anything like that I don’t think.
Implications for Practice

Based on his own turbulent experience with concussions and the perception of the injury on his own team, Luchador preached the need for a medical presence on the sidelines to improve the immediacy of possible concussion identification as well as transparency and support on the part of the coaching staff. He concludes:

There definitely needs to be more people watching the game for concussions. It would really help if we had an athletic trainer or doctor that we could go to. I also think we need to feel comfortable talking about concussions. Coaches need to do a better job of making sure concussions are taken seriously and that they care about their players.
**DISCIPLINADO:**

**Athletic Background and Concussion Profile**

*Subject Profile*

*Disciplinado* is a 13-year-old eighth grade student athlete who self-identified as White. He has played the past two seasons as the starting linebacker for his *rural* middle school football team in the Midwest region of the United States.

*Motivations for Athletic Involvement*

*Disciplinado* has participated in football since the beginning of his fourth grade year. From fourth through sixth grade, he played for his local “pee-wee football” league. He shared that in “pee-wee football” there are limitations on the amount of contact and the ability to tackle. Thus, his full immersion into football began during his seventh grade year when he was finally able to join his middle school team. Football, however, has not been the only sport to pique the interest of *Disciplinado*. Since the age of five, he has also been playing baseball, basketball, and recreational league soccer. Motivation for his athletic involvement has been derived from the structured opportunity to stay physically fit as well as the transferrable life applications of sport. He provides:

> I have always just really enjoyed sports and what sports offer you: the ability to stay physically active and run around, to meet new people both similar and different than you as well as make lifelong friends. These have always been the things that keep me going back to practice every day.
As he believes athletics to be intertwined with his self-perceived personal identity, *Disciplinado* stated that he plans to continue his journey in sports next year as he begins his high school career; however, he is most passionate about baseball and basketball and will resultantly not participate in football at the next level. He discerns:

I will most likely continue playing baseball and basketball in high school, but I don’t think I will play football. I think my passion for the other sports is far greater than it is for football.

**Personal Understanding of Concussions as a Sports Injury**

Although he has endured multiple appendicular injuries during his short athletic career, *Disciplinado* has never sustained a medically diagnosed concussion. He speculated that he may have sustained a few possible concussions based on his bodily responses to some pretty aggressive knocks to his head. Using a brief anecdote, he recounts:

One time, when I was playing football, I ran into another player and bounced my head on the turf really hard. I’m not sure if this was a concussion, but shortly after the hit, I remember lying on my back and waking up to a bunch of people and my teammates surrounding me. Apparently, I must have blacked out for a little bit. As I tried to get up slowly, I felt extremely woozy and disoriented. My coach helped me back to the locker room to wash the blood out of my mouth. After that, I tried to practice a little bit on the sidelines, but I was definitely not my normal self. I guess I think this might have been a concussion, but I never went to get it checked out by a medical team or anything.
Despite the initial feelings of abnormality, Disciplinado alleged that he felt enough like his normal self the following day to practice with his team without limitation. To that end, he asserts:

The hit occurred in practice during the afternoon, and I felt like I was ready to go for the game the next day. So, I wouldn’t say it really took me any time to recover.

Based upon his own experience with possible concussions, Disciplinado personally defines a “concussion” as:

A concussion is when you get hit in the head really hard and you become disoriented. You also have trouble remembering certain things.

Similarly, when prompted to provide concussion symptoms, he relays:

I would say: memory loss, nausea, headaches and general body pain are the big ones.

Moreover, in discerning the difference between a hit where one can subsequently keep playing and one in which the athlete needs to be checked out immediately, Disciplinado suggested that clarity is gained from listening to and trusting the athlete. Specifically, he mentions:

I think if the athlete comes forward and expresses that he is not okay, then he needs to be trusted and get checked out. But, if he reassures everyone that he is okay, he should also be listened to and keep playing.
Life Lessons and Sport

*Interpersonal Relationships and Team Dynamics*

*Disciplinado* shared that a major reason for involving himself in athletics has been the broader life applications of sport. To that effect, he expressed that he appreciates environment that sports provide whereby he has the ability “to meet new people both similar and different than you as well as make lifelong friends.” Such a difference of personalities and perspectives offers insights that allow one to grow in interpersonal communication and relationships.

Similarly, the ability to work within the context of a team forces one to consider those beyond oneself. One must determine how one can use one’s strengths to aid in the attainment of the team’s end goals. If one fails to work within the team’s structure and focuses solely on personal achievement, then the team begins to crumble. *Disciplinado* justifies:

> Also, every sport I have played so far has been a team sport. So, in working on a team, I’ve learned that you have to figure out your role and what you offer to benefit the team. Everything in life is not always about you.

*Discipline, both Within a Team and Individually*

In addition to the development of interpersonal skills, *Disciplinado* offered that the structure of sports allows for one to develop discipline. First, he spoke of learning how to be disciplined within the context of the team. In other words, one must do what is necessary for the betterment of the team. For example, one needs to be fully present and attentive in film review and walkthrough practices, even when other distractions may pervade the mind. Additionally, he preached the ability to be disciplined in personal accountability by giving as much as one can offer every time one steps on the field or into the weight room. He clarifies:
I have learned that I do really well when I am forced to be in disciplined situations, both in the team setting, where it’s not about you, it’s about what you need to do for the good of the team, as well as individually, where you have to hold yourself accountable to give your best. I would say that I have learned about the discipline to do what you need to do for the better of the team, even if it’s something you don’t want to do.

Commitment to Healthy Living

One final takeaway from sports that Disciplinado reiterated was the opportunity that sports provides to learn from an early age about holistic wellness and how to live a healthy and physically active life. He maintains:

I have learned how to enjoy physical activity and wellness and how to commit myself to these things for life.

Rationale for Symptom-Hiding

Disciplinado reported that in his own experiences with possible concussions he never felt pressured (either externally or internally) to hide his symptoms because everyone witnessed the hits he endured and made it a priority to make sure he was genuinely okay. However, in instances where the hit is not seen or the athlete does not appear disoriented, Disciplinado revealed that the lack of concern from those around the athlete leaves the responsibility of reporting symptoms (if present) in the hands of that athlete. Thus, these situations present the risk for silence on the part of the athlete. He presents:

I wouldn’t say there was ever any pressure in my situation to hide what I was feeling. I definitely felt supported to let everyone know what had happened to me
and what was going on. Everyone saw what had happened and was there to make sure I was okay. However, if they hadn’t seen it happen, I’m not sure what I would have done in that instance.

**External and Internal Perceptions of Walking Away from the Fight**

If one’s hit and subsequent disorientation fails to be sensed by the coaching staff, athletic trainers, and parents, then Disciplinado professed two possible reasons for the athlete remaining silent about their experience: the internal and external perception of walking away from the fight. Internally, one struggles with the need to carry on and be there for one’s team at all costs. One wants to avoid the potential guilt that would be associated with not doing one’s part for the success of the team, especially if the team ultimately loses. He remarks:

> I would say a big one has got to be the passion to carry on. You don’t want to be the one to let down the team.

Furthermore, Disciplinado voiced his concern for how leaving the field and getting checked out by the medical staff would be perceived from everyone else. As concussions are sometimes not as readily seen by an onlooker as would be a broken bone, he feared the reaction from the fans, coaches, and his teammates. One does not want to be mocked, scoffed at, and labeled with names that diminish one’s positive sense of self-worth, especially by one’s peers. To that end, he explains:

> You also don’t want to look like you are a baby or wussy and are one to easily give up because of a little injury.
Difference between Competition Levels in Reporting

Disciplinado acknowledged a divide between the starters and the non-starters most definitely exists in the reporting of concussions. He conceded that those who lead the team either as vocal leaders or via role modeling excellence on the field are the most likely to want to maintain their position and status and thus remain silent about their symptoms if faced with a possible concussion. In more detail, he observes:

I definitely think those who are starters, especially the leaders of the team, are the ones who always want to keep fighting no matter the obstacle and stay in the game. So, they would be the ones more likely to hide their symptoms.

Team Perception of Concussions as a Sports Injury

Incidence of Occurrence

Based on his experience within the context of his own football team, Disciplinado supposes that student athletes hide concussion symptoms “a good portion of the time. Probably around half of the time athletes will hide their symptoms.” On his team, he speculated the frequent occurrence of symptoms remaining under wraps; however, he conceded that he did not know if it was a genuine effort to hide symptoms or a lack of education about concussion symptoms. He clarifies:

I feel like there’s definitely times when we have been playing football where someone would take a shot and say they were really dizzy afterward and their bell got rung. But they would always keep playing and just move on to the next play. I’m not sure if these were times where they were hiding their symptoms or were just unaware and uneducated as to what had occurred.
After witnessing firsthand one of his teammates sustain a possible concussive blow to the head and display abnormalities after the hit, Disciplinado reported that he reacted with inaction and actually encouraged his teammates to keep playing because the team needed that individual out on the field to have the chance to win the game. He discloses:

In these situations, I always just brushed it off for the most part and told them to do so too. If they said they felt dizzy or woozy, I would tell them that they probably just got their bell rung and they needed to get back out there and focus on the next play.

**Lack of Team Support to Report Unless Deemed Serious by Athlete**

For concussions to be considered with concern, Disciplinado indicated that the concussion must be inherently obvious and seen, or the player must come forward independently and communicate how they are feeling. He insists:

I would say concussions are only taken seriously if you come forward and tell the coach and trainers that you are not okay. You have to be the one to initiate it and say that you are not fine, you are not okay. However, if you tell the coach, “Coach, I’m fine. I’m good. I’m ready to go,” our coach will listen, let it go and put you right back in the game to keep playing.

**Concussion Education**

Disciplinado professed that he has yet to receive any formal education regarding concussions, either in the “pee-wee football” ranks or on his middle school team. He expressed that at best the school might send home an informational packet, but if so, his parents have never brought it up and he has never read such materials. He provides:
No, I have never received education about concussions. If there is anything, there might be an informational packet that is sent home to the parents, but it’s not something I have read.

In addition to the lack of structured education, he testified that his team has never had a discussion about concussions as a sports injury. The only time the word “concussion” is uttered is when someone is diagnosed and the team asks the injured player how recovery is going. Specifically, he discloses:

Concussions are not something we talk about. If a player were to have a concussion, there would be talk to that player about how they’re doing with the recovery but definitely no discussion about concussions as a whole.

Implications for Practice

Based on his personal experiences and observations of concussions as an injury on his team, Disciplinado implicates the need for coaches to create a team environment that encourages reporting. Specifically, the coaches must clarify their expectations about the severity of concussions and clearly communicate their views on reporting symptoms. Ultimately, communication is key and dialogue about concussions should be encouraged and not silenced. Disciplinado concludes:

I think there needs to be a conversation before the season begins between the coaching staff and the players about concussions. I think the coaches need to make it known that they view the injury as serious and then encourage their players to come to them if they ever experience what they think might be a concussion.
HIGH SCHOOL PARTICIPANTS

APRENSIVO:

Athletic Background and Concussion Profile

Subject Profile

Aprensivo is an 18-year-old high school senior who self-identified as Hispanic and White. He recently completed his final football season for a suburban high school in the Midwest region of the United States. On his high school football team, he played various positions on both the offensive and defensive lines and also served as the team’s place kicker.

Motivations for Athletic Involvement

For Aprensivo, athletics have always been an integral part of his self-perceived identity and the “growing up” process. Since the age of five, he has been well entrenched in the sports culture through his involvement with football, soccer, basketball, baseball, and track and field. During his middle school years, he juggled academics as well as being a five-sport athlete. As he began his high school journey, he ultimately decided to play both soccer and football during the fall for his high school and club soccer and basketball in the spring. He has decided to involve himself in athletics from a very early age because of the structured exercise, team dynamics, and the thrill of competition. He explains:

Sports have been a big part of my life in maintaining my physical health, and these activities have taken a large part of my time as a kid growing up. I have chosen to play sports to maintain good physical health and shape, working in a team typically made up of my friends, and the competition is something that gives me energy.
Despite struggling with the injury bug, Aprensivo has continued to participate in athletics and hopes to continue to play sports in college. However, he clarified that due to the lack of an athletic scholarship, he will only participate in intramural sports should his health allow. He reiterates:

I did not receive any scholarships to continue playing in college; however, I will continue to play sports non-competitively if my health allows me to do it.

*Personal Understanding of Concussions as a Sports Injury*

*Aprensivo* personally defines a “concussion” as “any kind of serious head injury that results in a temporary or permanent loss of mental ability or memory” and predominantly consists of symptoms such as “dizziness, headaches, temporary loss of vision, loss of memory, and light-headedness.” During his time in athletics, *Aprensivo* has sustained one diagnosed concussion and thinks he might have sustained two other concussions in addition to the other injuries that have come with the territory (broken bones, torn ligaments, etc.). He recounts:

I was diagnosed with a concussion when I was a junior in high school. I was playing football and received blow to the head while I was trying to tackle the other team’s running back. The hit was so hard that it split my helmet and opened a pretty big cut on my forehead. I eventually went to the hospital to get stitches and the doctors checked for a concussion as well. They found it conclusive that I had received a mild concussion.

I have had two other experiences where I have thought I received a concussion but never ended up getting it checked. When I was eight years old, I was playing indoor soccer and I hit the top of my head on the wall. My dad said that I spun
around a couple of times and then fell down. I eventually went back in the game and seemed to be fine after, so it was never checked. Additionally, I was in gym class and decided to hang on the rim, but when I fell back to the ground, I lost footing and landed on my face. I ended up chipping one of my front teeth and had blood in my mouth. Immediately after the incident, I had a temporary black out, but just went to the nurse’s office and eventually the dentist to do something about it. At that appointment, I just received medication to relieve the pain in my mouth, but my head hurt pretty bad as well.

The recovery period following his diagnosed concussion consisted of one to two weeks without playing sports but an immediate return to school, despite the challenge of photophobia and a week-long spell of headaches. In the short term, he noticed “light sensitivity, headaches, and loss of concentration;” however, these symptoms dissipated without medication after about a week. He shared that he has not noticed any longer term effects but suggests time will provide more clarity on that front.

He shared that his concussion experience, as with many traumatic experiences, has offered him a unique opportunity for reflection and subsequent transformation. Through introspection in his time away from sport, he concludes:

Head injuries are a serious issue when it happens to you, and you have to take it seriously no matter how bad you want to win. Try to play sports in a manner that does not put your health or your opponent’s health at risk. The brain is a vital organ that needs to be protected.
Moreover, he expressed that the injury forced him to alter the way he approaches the game, especially in regard to his personal safety. Although he still maintains his competitive spirit, he now considers the consequences of his play-by-play actions on the field.

It has changed the way I approach sports, as it has brought my attention to player safety. No doubt, I am still competitive, but I just look for ways to play smarter.

**Life Lessons and Sport**

*Aprensivo* suggested that his involvement in sport has allowed for significant personal growth because of the unique atmosphere and life lessons that athletics provide.

**Interpersonal Relationships and Team Dynamics**

Team sports, according to *Aprensivo*, foster an environment whereby one can meet and develop friendships with individuals from a variety of ethnic and cultural backgrounds. Such diversity of experiences and personalities creates an atmosphere where one learns to work with people who think similarly and differently than oneself. Additionally, one learns how to trust one’s peers and identify one’s role within the context of the team. *Aprensivo* offers:

I just want to put forth my greatest effort and want the best for the team. Also, working in teams causes trust in your teammates and the eventual bonds that are made when you face challenges together is an incredible feeling. Sports offer such a cool environment where you make some of your closest friends and get to meet so many different people who offer unique perspectives on life and culture.
**Practice as the Impetus for Success**

In relation to the above theme, *Aprensivo* shared that to create fluidity and trust within the structure of the team, athletic teams must practice daily during the season and consistently in the off-season. This commitment to daily practice helps the team hone their skills and prepare a thoughtful game plan for each opponent they will face. More broadly, he claimed that there are many takeaways from witnessing the benefits of practice for in-game success. In one example, he conceptualizes:

> I have learned that I can do anything I can set my mind to when I practice.

**Rationale for Symptom-Hiding**

In addition to the diagnosed concussion, *Aprensivo* has endured several blows to the head and neck that resulted in him experiencing symptoms that he believes were consistent with a concussion; however, he ultimately decided not to report these experiences to anyone because of the following list of self-authored reasons.

**Possible Loss of Playing Time and Starting Position**

When prompted to discuss if he had ever “knowingly hid concussion symptoms after sustaining a knock to [his] head or neck during a sporting event,” *Aprensivo* emotionally revealed he had chosen to hide his symptoms, primarily because of the threat of losing playing time and his starting position. With only so many downs in a high school football season (especially if the team fails to qualify for the playoffs), *Aprensivo* expressed his fear of missing even a single snap, as he would be letting his team and himself down. Similarly, having worked diligently to move
up the ranks of the junior varsity to achieve the status of starting varsity football player, he felt threatened by the idea of reporting his symptoms and subsequently losing the starting position he had finally earned. He reflects:

Yes I have definitely chosen to mask symptoms in order to stay in the game because I did not want to be taken out. I have chosen to hide my symptoms because I had the threat of losing a starting position and playing time.

*Lack of Trust in Medical Staff, Coaches, and Parents*

As another major reason for choosing to hide his concussion symptoms, Aprensivo declared that he had a hard time trusting those invested in making sure he was okay. First, he discussed his frustrations with the approach of several of his coaches who would just repeatedly ask him how he felt and fail to do anything beyond that should the response from the player be positive. This created a climate of symptom-hiding where players knew they could keep playing as long as they could reassure their coaches that they were okay. He shares:

Additionally, I don’t think some of the people around me were asking the right questions because I would repeatedly get asked “Are you ok?” This is the easiest question to answer; of course, I am going to say I am ok and keep playing.

On the other hand, *Aprensivo* expressed that the overwhelming worry and franticity of the medical staff and parents would also make him question why he would report his possible concussion symptoms. The dominance of emotion rather than rational thinking exemplified by these parties was too intimidating for *Aprensivo*, as he did not feel as if he could have an objective conversation about how he was feeling (which could compromise the diagnosis). He articulates:
Although, they are probably more concerned for you than you are for yourself, their nervousness just makes you want to push the issue away so that you lose all of the attention and intense worry. Just from my experience of not having any trained medical professionals or people that can stay calm and controlled made it difficult to tell them about my symptoms.

*External Perceptions of Walking Away from the Fight*

As a starting varsity athlete, Aprensivo voiced his perception of what holding that title entails. As a starter, there is an expectation among one’s coaches, fans, and teammates that one will fight through anything to ensure the team’s success. If one fails to demonstrate this will-to-win-the-game-at-all-costs mentality and the team ultimately loses the game, then one will experience disappointment from one’s coaches, fans, and teammates and may even face blame for the loss.

*Aprensivo* pronounces:

It has got to be the will to win the game, because of the mere fact of the consequences of losing. The eventual disappointment from parents, coaches, and players puts all of the blame on you for not being able to play your part for the team. I think this is the first thing that athletes think of after they sustain any injury but especially a possible concussion.

*Difference between Competition Levels in Reporting*

*Aprensivo* shared that he has noticed a strong variability in reporting of concussions from his middle school years to now. Due to the lack of athletic trainers and medical staff at the middle school level, he revealed that he believes there was more hiding of concussion symptoms. However, he noted that the recent developments in concussion education and awareness have
improved concussion reporting from what it used to be. That being said, he suggested that collegiate and professional football players today probably hide their symptoms the most because the sport is perceived as a career rather than just friendly competition. He states:

When I was younger, I would say that kids would hide their symptoms all the time, but now that we have athletic trainers and just greater overall awareness of concussions, I would say that athletes are more likely to report symptoms. I think college and professional athletes are the worst at reporting because of what is on the line for their future careers and the intense competition that is involved in those games.

**Team Perception of Concussions as a Sports Injury**

*Incidence of Occurrence*

On his own high school football team, *Aprensivo* witnessed firsthand several teammates sustain possible concussive blows and fail to report their associated symptoms. When questioned if they were alright, his teammates would always respond with reassurance. Because he sensed he did not have the power to act and that he was not in a position to push his teammates to seek help, he always proceeded with inaction and passivity in these situations. He recounts:

I have had several experiences of my teammates hiding their symptoms both when I played in middle school and now, as kids would just say that they were fine after a head injury. I felt like I was not in a position of power or authority to tell them to seek advice. Also, I just don’t know what they are actually experiencing. The curiosity and concern for the person was there, just the incentives to ask or do something about it was not there.
Emblem of Weakness

As a team and brotherhood, Aprensivo’s high school team conceptualized a concussion and disclosing one’s concussion symptoms as a weakness. In so doing, the team viewed one as uncommitted to the team’s end goals and as someone who cannot fight through pain. Specifically, he provides:

On my team, concussions are perceived as a sign of weakness. If you cannot bear the pain of the injury, then you are letting your team and brothers down and showing that you do not care for the goals of the team.

Concussion Education

Aprensivo asserted that he had received very little education regarding the phenomenon of concussions in sports. He provided that he had not learned about concussions until high school due to the lack of any structured education program or take-home materials in elementary and middle school. His high school, on the other hand, required all student athletes to sign off on watching a video about concussions in sports; however, the video was not taken seriously by his teammates. He comments:

For high school sports, we have to watch a video every year on concussions and sign off that we had watched it; however, the video isn’t really informative and most of my teammates don’t take it seriously. For club soccer, there was no education on concussions. Middle school and elementary school sports had no education as well.
**Implications for Practice**

In reflecting on his own experience with concussions and his observations of his teammates over the last four years, *Aprensivo* suggested that improvements in concussion recognition and diagnosis must begin with more power for the officiating crew to forcibly remove any player suspected of having a head injury as well as a stronger presence of medical personnel on the sidelines actively watching every play. In total, he perceives more eyes both directly on the field of play and on the sidelines looking for red flags following a hit to the head or neck will go a long way in mitigating the ability for concussions to slip through the cracks and remain masked. If a student athlete sees a loophole whereby he can beat the system, he will take full advantage to stay in the game; thus, he shares it is of the utmost importance to identify and close up these loopholes so that concussion evaluation is not compromised. He concludes:

For high school football, I think there needs to be at least one athletic trainer or medical professional on the field to be present to clear players before entering the game. The process for evaluating players should not be hindered by the competition on the field, as the medical professional has the best chance at determining if the symptoms are being masked by player. Additionally, the referee should have the discretion to stop the game after a serious head collision, even if the player does not remain down on the floor. I wish there could be a way to prevent every concussion from happening, but the natural events of the game never end up playing out that way.
GUERRERO:

Athletic Background and Concussion Profile

Subject Profile

Guerrero is an 18-year-old high school senior who self-identified as White. He just finished playing his final high school football season for a rural high school in the Midwest region of the United States. He primarily led the team’s defensive unit through his efforts as a linebacker, the “quarterback of the defense” as he puts it.

Motivations for Athletic Involvement

Guerrero has been playing football since his sixth grade year of middle school because of the opportunity for physical interactions and team dynamics. To this end, he asserts:

I like hitting people; I like getting in the action of it. I love making tackles, sacks, and setting a great block for my teammates.

Moreover, he also chose to play baseball throughout his middle school years before ultimately deciding football was where he wanted to invest all of his athletic focus. He mostly involved himself in baseball, because it fulfilled his yearning for competition. He articulates:

Anytime where I was out on the field, getting competitive, making diving catches, etc. was time well spent.

In his college career, he plans to continue playing sports at the intramural level for fun; however, he shares that he does not want to play organized football at the next level due to the increased physical prowess of his competitors. He expresses:
At the college level, the game of football is dominated by these guys who are beasts, who are animals. I don’t think I’d want to play at that level.

*Personal Understanding of Concussions as a Sports Injury*

As a linebacker for his high school football team, *Guerrero* suffered several knee and back injuries but was never diagnosed medically with a concussion; however, he speculates he might have sustained a couple of concussions throughout his high school career:

I’ve endured several big hits playing football where my brain rocked for a good minute or so. Everything went blurry for a while and I didn’t feel quite right. But at the same time I knew I needed to snap out of it and keep playing.

*Guerrero* understands a concussion as a dazed state following a hit to the head that results in an athlete blacking out. He personally defines the injury as:

Blacking out. Having a daze on where you’re like “whoa, I was just in the game. What happened?” Or having a headache so bad you can’t move for hours due to the pain.

He suggests that you can tell whether an athlete has sustained a concussion based upon a sense that something is noticeably “off” about this teammate who is not acting like their normal self.

He concludes:

You can definitely tell in the eyes something’s not right. The person seems spaced out or blacked out. The person almost appears drunk. Wooziness. Inability to talk right. Headache. They could be lying passed out on the field after a huge hit.

Basically, anything that makes you seem “off” after a hit to the head.
Life Lessons and Sport

Interpersonal Relationships and Team Dynamics

Guerrero expressed that playing sports, specifically team sports, has offered him an environment where he can grow in his ability to connect with others who are both similar and different from himself and learn to work within the context of a team to achieve a common end goal. He explains:

Sports offer an opportunity for great exercise and a chance to hang out with your friends outside of school and meet new people. Sports are fun, competitive and allow you to learn about being on a team. It’s always been something I have wanted to be involved in. Also, it’s a great chance for socializing and getting to know other people like you and different from you. Next thing you know, you see someone down the line that you played with or against in sports growing up, and you have this bond that ties you together.

Perseverance, Practice, and Progress

Guerrero used a roller coaster metaphor to demonstrate his self-perceived similarities between the ups and downs that are intrinsic to sport as well as life. He shared that in sport, just as in life, some of the greatest opportunities for personal growth and understanding come from one’s mistakes and downfalls. Through introspection and reflection, one can learn a lot about oneself from these moments of adversity. The perseverance to get through the rough patches, and as he states, “fight through the cards you are dealt,” allows one to learn how to adequately handle the obstacles that life throws one’s way. This inherent challenge to become better on the other side
of adversity allows for appreciation and celebration when one ultimately achieves and sometimes even surpasses the end goals one sets for oneself. He provides:

You get put in some situations out there. Some situations you may think are unfair. Some situations may even piss you off. It’s a roller coaster. So many ups and downs in sports. For example, you go through all of these two-a-days for football in the summer. It’s horrible. It’s hot. Sometimes you can’t stand it. But at the end of it all, you get better and you make a big time sack for your teammates in the first game, and it makes all that hard work you put in worth it in the end. For me, it all comes back to the question, is it worth my time? And those little moments are there to let me know what I’m doing is worth it.

**Rationale for Symptom-Hiding**

*Possible Loss of Playing Time and Starting Position*

When asked to explain why he felt like he “needed to snap out of it and keep playing” after sustaining possible concussive blows to the head and neck, Guerrero first expressed a strong concern for being taken out of that specific game and possibly losing his status as a varsity starter, something he worked so hard to achieve. The threat of having something so integral to his personal identity be taken from him by reporting his symptoms was too much of a risk. He passionately reiterates:

I knew if I ended up having a concussion, I would lose everything I worked so hard for to be starting for varsity ball. People fight so hard to have the opportunity to play their position that if I were to back down after something so simple as a hit to the head where I was not absolutely clobbered and required hospitalization,
then I would be backing down from who I am, not be able to help my teammates continue the fight and risk losing everything I worked so hard to get.

Importance of Power for Positive Self-worth

Guerrero emphasized a key distinction between concussion reporting between junior varsity and varsity football. The prestige and reputation that comes with being a varsity football player for the high school (especially a starter) holds a lot of weight in small town football according to Guerrero. Having finally reached the pinnacle of high school football by playing for the varsity squad and being scouted to play college football, he shares that missing even a single rep could result in a major setback to one’s athletic future. To that viewpoint, he justifies:

If you got a chance to play varsity ball, you wanted to be in the game at all costs. Once you moved up the ranks from JV to varsity ball, if it was something you could hide, you hid it. The varsity players are way more invested in what they are doing. They have worked hard for their position and they want to be seen as a starter. They like being a starter. They love being out on the field. They have really earned their varsity letter. It’s one of those things for them where they are like, “I am not walking away from varsity ball. I am starting. I have 50-some other kids I am out there competing with. I am the best out there at what I do, and I am not going to let some other kid take my position. Because two weeks later, I will come back and not have it anymore.”

It was more of the JV kids or the non-starting kids that you would see actually walk off and get checked out after taking a crack from those who were the better players. Those were the ones who would walk off the field; whereas, those who were the starters that had earned their position out on the field would do
everything they could to stay out on that field. For them, it was looked more down upon to come off so they, as in the concussions, were hidden more.

Injury Lacks Severity

Next, he shared his perspective that one should only report one’s possible concussion symptoms when one (A) deems the injury to be serious enough to require hospitalization or (B) is not mentally and/or physically capable of continuing to play one’s position. According to Guerrero, if one can walk or shake off the hit, one must return to one’s position and ready oneself for the next down of play:

Unless it’s something serious and you really can’t play, there’s no reason to come out of the game. People fight so hard to have the opportunity to play their position that if I were to back down after something so simple as a hit to the head where I was not absolutely clobbered and required hospitalization, then I would be backing down from who I am, not be able to help my teammates continue the fight and risk losing everything I worked so hard to get. I mean unless it’s something serious, you got to keep fighting. Everybody gets hit in the head, takes some big knocks, and just plays hurt. It’s just a part of the game. Unless a doctor or someone pulls me out to say I suffered something serious, it’s more emphasized not to report how I’m feeling.

External and Internal Perceptions of Walking Away from the Fight

Another fear of reporting expressed by Guerrero was the perception by others (teammates, coaches, parents, etc.) that he was walking away from the fight if he came out of the game to report how he was feeling. He was afraid that he would be perceived as weak, inferior, and
someone who gives up too easily. This external perception is the exact opposite of how he always said he wanted to be perceived, as a warrior and fighter. He passionately articulates:

That would’ve taken the competition out of it and showed that I can’t fight back after I take a big hit.

In a way I feel supported [to report concussion symptoms], but at the same time, I feel that the parents, my buddies, and my coaches will look down upon my ability to compete and fight if I were to come out of the game. If I come out of that game, they are going to see me as the guy that walked away from the fight. I mean unless it’s something serious, you got to keep fighting. Having everyone look down upon you for walking off the field makes you question why you would leave the fight for something so minor.

I always play for myself, but to be put down especially by the parents, coaches, and my friends who I am playing with makes me question why I would walk away from the fight.

Additionally, he disclosed that he felt strong internal pressures to hide his symptoms because he would be letting himself down as well. His internal drive and pride to fight and compete at all costs would be compromised by walking off the field to be treated. When prompted to provide a major factor contributing to concussion symptom-hiding in athletics, he responds:

One-hundred percent: pride. Pride of the game. Pride of “I am not leaving. I am not taking a step off that field.”
Difference between Competition Levels in Reporting

In considering how his perception of concussions has changed from middle school to high school football, Guerrero has noticed a steady decline in his own concern about the injury due to his physical growth and increase in playing time. More specifically, he mentions:

The bigger you get, the less you have to be concerned. The bigger, the harder you can hit, the more starting time you get, the less concerned you are with it. Way more likely for you to say, “I am not leaving my position.” Many more people said they had a concussion in middle school ball. Maybe it was because they were more nervous then or because the brain wasn’t as developed at that time. But it’s weird because the hitting wasn’t anywhere near what it is in high school.

Team Perception of Concussions as a Sports Injury

Incidence of Occurrence

Guerrero mentioned that concussion symptom-hiding was a regular occurrence for his team and that he expects this is a common issue that exists throughout all of high school football across the nation. He specifies:

I would say that every game or at least every other game there was some kid who was out there hiding their concussion symptoms. They would just keep walking, keep fighting through it. Usually the varsity starters, those who are the big time hitters, are the ones who hide it more often.
**Lack of Team Support to Report Unless Serious**

In relation to the above theme, *Guerrero* revealed that he has personally witnessed several teammates hide concussion symptoms out on the field and continue playing. In those instances, he reacted as follows:

> I told them to shake it off and then I just walked away. I thought it was something where if you were a major starter out there, you should not be coming off the field.

Moreover, he indicated a common mindset amongst the varsity team not to report unless everyone could tell the symptoms were severe enough that medical attention was absolutely needed. Until that state was achieved, the collective response to a possible concussive blow was silence. In that regard, he communicates:

> As a team, we didn’t think too much of [concussions]. We just thought to walk it off. It’s just a hit to the head. Everybody takes hits to head. It’s nothing too major. I mean if it was something really serious, we could all see it because that person was really screwed up. So then, we would tell that they were hiding it, and we would tell them to walk over to the trainer.

Additionally, *Guerrero* clarifies that the severity of the concussion could be sensed by one major factor: complaining. As a team, he suggests the collective perspective that:

> It really comes down to the personality of the person. A lot of times they would say, “I’m fine.” But usually the more fine they said they were, the worse off they really were. Those who said they thought they had a concussion after a big hit to the head were the ones we thought were just trying to get out of practice or were
just too nervous to be out there. They used it as an escape. They were getting beat off the line. Beat out for their position by another kid having a good day. Next thing you know, they are on the sideline saying they have a concussion. But, those that said “I’m good” were the ones you had to be worried about because they were the ones fighting harder to stay in.

**Concussion Education**

*Guerrero* asserted that the concussion education received by the team prior to the football season is minimal at best. The coaching staff glanced over some concussion symptoms strictly to fulfil a requirement, and education materials are sent home to be read independently by the players in their free time. He noticed a taboo cloud surrounding the word “concussion” in his team’s locker room. To that effect, he states:

> They send some materials home that none of us ever look at. It’s one of those things that everybody’s going to overlook. Coaches will talk about it and tell us about the symptoms, but it’s one of those things we never had a big discussion about. Nobody ever made a huge issue about it. With us, it’s kind of like on the show *Blue Mountain State*, nobody talks about the “C-word.”

**Implications for Practice**

In reflecting on his four years of playing football in high school, *Guerrero* emphasized the need for medical staff members to be the lookout team for possible concussions and to forcibly remove anyone they suspect has sustained a concussion because too many factors may influence the athlete to hide their symptoms. He rationalizes:
More pressure needs to be put on the trainers. A kid is not going to want to come out and willingly share their symptoms. You can put a video up there a million times. You can preach it. You can say it’s okay to tell someone about your symptoms. But, the trainers need to be watching more closely for it and pull a kid out for testing when they suspect something is wrong. I think people need to get checked out more than they do now. You see in the pro game where doctors are constantly checking out players and saying no to their return to the game.
SOCORRO:

Athletic Background and Concussion Profile

Subject Profile

Socorro is an 18-year-old high school senior who self-identified as White. In the fall, he played his last snap of his final football season for an urban high school in the Midwest region of the United States. After moving around from position to position over the course of his first two years of high school, he finally settled into a more consistent role as inside linebacker where he could use his booming voice and strong leadership qualities to command the team’s defense.

Motivations for Athletic Involvement

Having a twin brother with whom he was quite competitive, Socorro and his brother involved themselves in sports starting at the age of six. Initially, team sports provided a sphere where Socorro and his brother could enhance their relationship with each other by playing on the same team. Until middle school, he viewed athletics as an enjoyable extracurricular activity that consisted of playing non-organized soccer in a recreational league close to his childhood home. Once middle school began, however, sports transformed into a strict competition where winning was the only perceived end goal. He shifted from his participation in soccer to football, basketball, and track and field. Then, the increased rigor of high school academics and other extracurricular involvements forced Socorro to eliminate his involvement in track and field to focus solely on basketball and football during his freshman year of high school. After struggling to find a life balance due to his various involvements and commitment to academics, he decided to focus entirely on football for his last three years of high school. This passion for sports
throughout his prior 18 years of growth has always been derived from the thrill of competition and the outlet for physical activity. He explains:

> I have always enjoyed playing sports. Maybe it’s because of the competitive nature of having a twin brother. It’s just a blast getting to run around, and I really like the competitive aspect that comes with sport.

Moreover, he plans to continue his involvement in sports at the collegiate level; however, due to his intense focus on academics, sports will play a much lesser role. Unless he receives an athletic scholarship, he shares that his participation will be limited to intramural sports. More concretely, he comments:

> I would say [I will] probably not [be playing] competitively [in college] unless I get a really amazing scholarship. And that’s probably not very likely. However, I do think playing on some intramural teams would be fun. But, at the end of the day, academics needs to come first because I am going to college for school, not sports.

**Personal Understanding of Concussions as a Sports Injury**

Throughout his sports career, Socorro revealed that he had never been diagnosed medically with a concussion; however, he surmised that he has more than likely sustained a blow to the head or neck that would be characterized as a concussion. He articulates:

> I got hit in the head pretty hard one time that resulted in me having a really bad headache directly because of that. But I didn’t think it was severe at all. So, technically that probably was a sign of a potential concussion that I hid and kept to myself because I didn’t consider it significant enough and still wanted to play
for my team. And come to think of it, I do also remember two times where I got hit in the head so hard that my entire body went numb. I had numbness and tingling sensations shooting down my arms for at least 4 or 5 seconds after that. So reflecting now, that was probably a red flag that I didn’t recognize in the heat of the moment.

Socorro conceptualizes a concussion as the “brain hitting the skull from the inside” and personally defines the injury as “trauma or bruising of the brain due to force or contact to the head.” He provides three major red flags that can alert those around that an individual may have sustained a concussion: “(1) dilated eyes; (2) a loss of perception; in a way, they aren’t one-hundred percent there/with it; and (3) even something like vomiting.”

**Life Lessons and Sport**

**Leadership and Team Dynamics**

The first life lesson presented by Socorro was leadership and learning how to be an effective leader within the context of the team dynamic. He shared that although he was considered by his peers as the leader and captain of the defensive unit as a linebacker, he came to realize his greatest contribution as a leader would be to foster fruitful development among the younger players on the varsity and junior varsity teams. He concludes:

The first thing that comes to mind has to be leadership. I learned to care about developing the younger players on our team and that they could fit into the team and work well.

Additionally, he sensed the relationship between team dynamics in sports as well as more broadly in life. He provided two major transferrable skills that can be taught about teamwork
through sports: (1) the ability to work with others different than oneself and (2) learning to identify one’s role within the team structure based on what strengths one brings to the table. He specifies:

> Another big thing I’ve learned is team dynamics, especially in the sports of football and basketball. You have to work as a team to win, so you have to figure out how to work well as a team and what you contribute to the team. It’s also about leading others on your team and collectively achieving your team’s end goal.

*Practice as the Impetus for Success*

_Socorro_ also indicated the importance of practice in achieving one’s short-term and long-term goals. He insisted that one has the inherent ability to control and ultimately self-author one’s direction in life via hard work and active dedication. Supporting one’s active dreaming with daily practice to enhance one’s strengths and rectify one’s weaknesses is a major factor in ultimate success. He states:

> Another is practice; if you put a lot of effort into something, you tend to come out with a good result because of that hard work.

*The Art of Winning and Losing*

In relation to the aforementioned theme, _Socorro_ introduced the notion that even with practice and hard work, one will not always achieve the desired outcome. As in sport, life presents incredible challenges that may impede one’s ability to “win.” Losing is an intrinsic part of life that one must learn to reconcile. To that effect, _Socorro_ contends:
And even in winning and losing. Even if you do something extremely well, you’re not always going to win. Sometimes you lose. That’s just a fact of life. And I’ve learned that it’s okay.

Catalyst for Significant Personal Growth and Development in Self-Awareness

Similarly, the challenges and adversity one faces through sport offer ample opportunity for personal growth and transformation as one begins to understand one’s self-perceived identity and purpose. Socorro recounted a significant personal challenge during his senior season that allowed him to grow and reassess his perceived role within the team. He offers:

I would say I have grown the most in my own ability to lead other people and to work with other people. I also felt like I have grown a lot over the course of this past year. Last fall, I got really sick with mono, so I couldn’t lift or practice or do anything with the team for two months. So, I had all of these dreams of being a full-time starter and being a really good athlete for our team. And I had to learn to accept that dream was going to have to go away because I lost all of my skill right before the season started because I missed so much time. And I think that really helped me to grow a lot because I learned a lot more of the transferrable concepts of sports. I learned to care about developing the younger players on our team so that they could fit into the team and work well. And I think I began to finally realize that it’s not all about the end goal of getting a bunch of playing time as a starter.
Rationale for Symptom-Hiding

Possible Loss of Playing Time and Starting Position

Based on his own previous experiences with concussion symptom-hiding, Socorro personally disclosed that one major reason for doing so was the possible loss of playing time and his starting position. As earning a starting position on the varsity team had required an incredible amount of work, he felt threatened by the notion that everything he had worked so hard for could be taken away by choosing to report concussive symptoms he felt would ultimately just go away with time. Similarly, in understanding his perceived role on the team to be the leader of the defense, he felt as if missing any playing time would compromise his ability to carry out this task. He explains:

And there definitely was a fear that I put so much effort in trying to start and finally earning a lot of playing time that if I told my coach about going numb just briefly or having a headache that he would pull me for the rest of the game. These all happened in really big games, and I really wanted to play for my team.

Injury Lacks Severity

In relation to the above theme, Socorro provided that he did not perceive the possible concussions as severe enough to warrant the disclosure of his symptoms. He proposed that after sustaining these hits to the head he felt “normal” and as if he could still optimally perform his responsibilities for the team; however, he also denoted that should he perceive his symptoms as serious, he would choose to immediately come forward to the medical staff. To that end, he states:
I guess the reason I didn’t come forward with how I was feeling was because I felt like I still had a normal range of abilities, normal mental function and everything else. And I guess if it were more significant from my vantage point, I would have probably decided to report.

Reservations in Disclosing Symptoms with Coaches and Teammates

If he perceived the injury as severe, Socorro indicated that he would feel comfortable presenting his symptoms and experience to the medical staff as well as his parents because of the apparent relational trust. Alternatively, he expressed an apparent lack of trust in his ability to communicate his symptoms to his coaching staff and teammates due to concern for the possible reactions. He maintains:

The first person I would see if I felt what I was dealing with was significant enough would be my athletic trainer. I could definitely go to him with how I’m feeling. I would then go to my parents second to tell them what had happened and what the trainer had said. And I don’t think I would consider telling any of my coaches or teammates due to a concern with how they might respond. I would definitely want to see what my athletic trainer says first.

Lack of Return on Investment

Similar to his preoccupation with the loss of playing time and starting position, Socorro hinted at a fear in the possible lack of return on his investment. He contends:

One [factor] would be the ratio of practice to playing time. For example, on our team, we practice, lift, and condition so hard all summer. And then when the season really starts, we practice four days a week for extensive amounts of time
and then only play in a game for an hour or maybe two tops. There’s so much time that you put in for such a small amount of game-time minutes. When an athlete gets concussed in a sport like this, they are probably going to hide it because they don’t want to see all the game days they worked so hard for pass on by without being able to play in them and have to watch from the sidelines. Another factor would be the number of games in a season. There’s only so many games, so if you’re out two weeks, you might miss a quarter of the games in the season not including playoffs.

**Difference between Competition Levels in Reporting**

When asked to share any observations on the difference in his perception of concussions from middle school to high school, Socorro commented that he has noticed significant strides in his awareness of concussions as a serious injury. Specifically, due to the lack of concussions reported during his middle school years, he believes he has grown extensively in his understanding of the injury by seeing several of his teammates sustain and recover from a concussion. Because of this firsthand experience witnessing concussions occur during his high school career, he offers:

Yeah, I would say I have become more aware of concussions in general. In my middle school years, I would have never thought about getting a concussion. And we didn’t really hit as hard so maybe there’s some truth to that. But in high school, I have come to realize the long-term effects and seriousness of getting hit to the head so many times.
Correspondingly, he argues that there is an observable distinction between the reporting of concussions among the junior varsity and varsity teams. He remarked that there is inherent value in being designated with the status “varsity football player.” The popularity that is associated with this title in high school and the town coverage highlighting the varsity football team enhance one’s sense of positive self-worth and value. Additionally, because of the spotlight, one has a greater likelihood of getting noticed by college football recruiters. Resultantly, with so much more on the line for varsity athletes, there is an obvious rise in the number of possible concussions hidden from view. He speculates:

I would say that if you were on the junior varsity you were way more likely to come forth with your concussion symptoms than if you were on the varsity team. And I think that’s definitely correlated with playing time and popularity in the school and community. Varsity is what makes the town newspapers. You work so hard to do all the practice all year long to get varsity playing time. You don’t practice forever to play junior varsity, so since the stakes aren’t as high, more would report if they were on that team. That way you could sit out and recover and come back to try to make varsity next year. But varsity is everything you’re playing for. It’s so much easier to hide it.

Moreover, Socorro suggested that there is a similarity in the reporting patterns of concussion symptoms between starters on the varsity team and the non-starters. The non-starters are predominantly concerned with having the most opportunities on the practice field to impress the coaching staff and eventually become a starter. The starters, on the other hand, fail to report to maintain their starting role and prevent their back-up from outshining in their absence. He specifies:
And in terms of starters vs. non-starters, I would say those who got less minutes were less likely to report a possible concussion because of the implications of playing time. And then the starters don’t want to report either because they don’t want to lose their starting role on the team.

**Team Perception of Concussions as a Sports Injury**

*Incidence of Occurrence*

In regards to the incidence of student athletes on his team knowingly hiding their concussion symptoms, Socorro estimates:

> If I were to ballpark a number, I would say around 80% of the time. I think it’s a pretty substantial problem.

*Personal Reaction to Noticeable Symptom-Hiding*

When placed in a specific situation where one of his teammates had possibly sustained a concussion and demonstrated the corresponding symptoms, Socorro reflected on his inaction and passivity due to his extreme focus on the game and the next play ahead. Thus, he felt blinded by his in-game mentality to even notice what had occurred to his teammate. He shares:

> So, it was our first game of the year actually and one of my teammates sustained a pretty obvious concussion toward the beginning of the game and played most of the rest of the game. I was too worried about the game, so I didn’t do anything about it in that moment; however, after the game, when I realized what had happened, I thought to myself that was pretty stupid. I wished he would have had the sense to realize he was concussed and go tell someone.
Moreover, Socorro identified a spectrum of perspectives regarding concussion reporting on his own team. Despite his inaction in the aforementioned example, Socorro commented that he and several of his teammates fall into a group that favors reporting immediately; however, there also exists a group of teammates who vehemently oppose such reporting for a variety of reasons. This spectrum creates a team dynamic whereby there is no consensus on how to act; thus, there is a general lack in accountability among the teammates. He testifies:

I would say there’s quite a range of people on our team. I fall more on the spectrum of reporting as soon as you think something isn’t quite right. And I definitely think there are some other teammates who fall in that same category of promoting reporting. But there are also a group that does not promote reporting because it’s not seen as significant and they don’t want to lose the playing time they’ve worked so hard for. There’s definitely a spectrum of viewpoints when it comes to reporting on my team.

Rationale for Spectrum of Perspectives

In providing discourse to explain the rationale behind the team’s varying viewpoints regarding concussion reporting, Socorro articulated that those on the time who proceed with passivity and not reporting following a possible concussive blow do so under the influence of external perception of concussions as a sports injury. He further clarifies:

On our team and in sports at large, I think concussions are really seen as bad news. They’re taboo. Nobody wants to talk about them. No school or sports team wants to say, “Hey, we led the county in concussions this year.” So, yeah I think
most people want to hide them because of the negative connotation/stigma that comes with the injury.

Alternatively, Socorro and those who favored immediate reporting on his team acted in this manner due to exposure either personally or more distantly with the short-term and long-term effects of concussions on one’s life going forward. He pronounces:

On the flip side, I think for me (and those of us who favor reporting) the need to report comes from seeing all the horror stories of receiving too many concussions. You see the effects and the damage it causes to these people’s lives and you know you don’t want to end up like that.

**Concussion Education**

When asked to discuss the concussion education he received from his high school, Socorro asserted that he failed to receive any kind of formal education. He shared that, at best, he was briefly exposed to the signs and symptoms to look for after taking a hit to the head. Additionally, he guessed that the school might have sent home paper materials to read independently, but he did not have any interest in pursuing this information. He admits:

We do not. At least not anything seriously formal. Our athletic trainers reviewed some of the signs of concussions with us but absolutely nothing formal. The education is pretty minimal I would say. I think they might send home some paper materials to our parents but it’s not something I would want to read or really care about.
Implications for Practice

*Socorro* identified two major changes that should be implemented to improve concussion reporting in pre-college athletics in the future. He suggested that coaches must be held to a higher standard of accountability in noticing possible concussions on the field as well as creating an atmosphere where reporting is encouraged. Furthermore, he expressed a need for the improvement of education to instill the severity of the injury and importance of reporting early. He concludes:

I think coaches need to be more accountable for pulling out players who they notice might have been concussed, like the player on my team who played three quarters of the game or more concussed. They need to make sure they don’t go back in the game no matter what the student says or how much they beg. Another big thing I would like to see happen is more education or delivery of some kind to express the seriousness of multiple concussions. I know several people who have had six or more concussions and continue to play the game. For them, another concussion is just another tally mark. Coaches need to be more accountable for identifying them, and student athletes need to know that although we are young, these injuries are very significant and can have life-long implications.
HERMANO:  

Athletic Background and Concussion Profile  

Subject Profile  

Hermano is an 18-year-old high school senior who self-identified as White. He has played middle linebacker in the heart of the defense for his rural high school football team in the Midwest region of the United States for the past four seasons and is now preparing for graduation and his collegiate journey.  

Motivations for Athletic Involvement  

Hermano has participated in athletics since the day he learned to walk. He shared that he has played soccer, football and basketball throughout the years, but football has always been the sport he feels most passionate about. He began playing football for his district’s “pee wee football” league from third through sixth grade. Although he enjoyed “pee wee football,” his love of football really began when he was allowed to play for his middle school team in the seventh grade and could finally “start hitting people.” Since then, football has been his athletic priority. This involvement in sports is tied to his view of athletics as an important part of his personal identity. He even remarked, “Other than school, playing sports is what I do.” Similarly, his other motivations for playing sports are the structured exercise and fulfillment of a yearning for competition. He shares:  

I have played sports throughout my life because of the opportunity to stay physically active and to fulfill my love for competition. I also always looked up to older athletes when I was younger. I wanted nothing more than to be a part of our city’s football team. Of course, every young athlete wants to be famous, but as I
got older, my dreams became more real. I wanted to have the brotherhood that comes with organized sports.

Although he has thoroughly enjoyed his time playing football throughout high school, *Hermano* provided that he will not be continuing in the sport at the collegiate level. Instead, he will participate in non-competitive opportunities to stay involved with sports and have an outlet from the stresses associated with academics.

I will not be pursuing athletics in college competitively; however, I will definitely keep playing non-competitively in whatever capacity I can, because sports have always been an outlet for me from school.

*Personal Understanding of Concussions as a Sports Injury*

Among other injuries in his time playing sports, *Hermano* has sustained three diagnosed concussions, with his fourth concussion coming from a fight at school. He recounts:

I’ve had 4 diagnosed concussions, one was from a fight, and the others were all football related. The three concussions I got playing football all happened from helmet-to-helmet collisions or bouncing my head off the turf when making a tackle. After the first concussion, I felt like it didn’t take as hard of a hit for me to start experiencing the symptoms of a concussion.

Following the first two concussions, *Hermano* suggested that the recovery period was rather short and inconsequential; however, with the most recent two concussions, he was removed from football and even school for months. During these longer recovery periods, he reminisced about the feelings of helplessness and frustration that accompanied his time off. He admits:
The recovery was pretty short for my first two concussions, like a week or so. But concussions three and four seemed to last a long time, as I was out of football and even school for a month or a couple months at a time. For the most recent concussions, the recovery taking so long made me feel kind of helpless because all I could do was rest and let my brain try to get better. It was extremely frustrating.

Throughout his four concussive episodes and in the time since, Hermano has noticed several short term and longer term consequences of his injuries. To that end, he denotes:

Short-term effects were mainly just headaches, confusion, and any light or sound was super grating. In terms of the long-term effects I’ve noticed, I would have to say the longer lasting migraines as well as the slowing of my thought process. My ability to think like I used to has definitely declined and made it harder to get through my classes at school.

Because of these short-term and long-term effects, Hermano has realized the importance of protecting the brain, especially during the developmental years. He suggests:

Through my four concussion experiences, I’ve learned that it is very important to keep your mind and body safe especially at a young age when your brain and body are still developing and growing.

As he has learned about the severity of the injury firsthand, he articulated that his concussion experiences have most definitely changed the way he approaches and thinks about the game of football. He acknowledged that he has invested in playing smarter and spent more time on technique to prevent further concussions as much as he can. He insists:
My concussion experiences have made me play much smarter and work more on my technique of tackling to make sure my form doesn’t lead to an easy concussion.

Having endured four concussions himself, *Hermano* understands a concussion as “a bruise or contusion to the brain from a hit to the head” with symptoms consisting of: “headaches, blurred vision, confusion, slowing of the motor skills, more tired than normal.” Additionally, he provided that the easiest way to denote a concussion from just a bad hit to the head is by assessing the player’s behavior. Knowing all of his teammates pretty well because of how much time they spend together, he implied that it is pretty obvious when a teammate seems noticeably “off” and not like himself. He maintains:

You can visibly see that the player is not acting the way they usually do. Being around my brothers every day at practice and school, I know them well enough that if something is off or different about how they’re acting after a hit to the head, then they need to get checked out ASAP.

**Life Lessons and Sport**

*Interpersonal Relationships and Team Dynamics*

By involving himself in team sports, *Hermano* claimed that the broader implications of working in a team-based system are undeniable. He has learned the importance of teamwork and fulfilling one’s role within the team. He pronounces:

Through team sports, like the ones I have played, I have also learned how to work with and develop relationships with so many different people.
Personal Development and Growth

Hermano noted that he has also learned a lot about himself along the way on his athletic journey, because “sports offer athletes the opportunity for significant personal development.” He imparted that sports provide a unique sphere whereby one constantly has the opportunity to act and reflect on the action’s outcomes and consequences. Such opportunities for reflection and introspection create the cornerstone for dynamism and self-discovery.

Discipline

In relation to the aforementioned life lessons, Hermano discussed his learning of discipline through sport. He indicated that the discipline associated with the structure of sports has enhanced his work ethic and taught him how to pay attention to the details. He justifies:

I would also say that the discipline sport teaches you has helped me develop a hard work ethic to practice the little things it takes to be the best I can be for the good of the team and my brothers. Many of the things that drive me today came from development in sports.

Rationale for Symptom-Hiding

Prior to sustaining his four concussions in high school, Hermano admitted that he struggled with hiding his symptoms during middle school; however, once he sustained his first concussion, extra attention was invested in checking him out after any hit to the head. He tells:

When I was playing middle school football, I definitely hid my symptoms, but once I sustained my first concussion, everyone paid extra attention to me so that I couldn’t hide anything.
Possible Loss of Playing Time and Starting Position

When he chose to hide his symptoms, one major factor was the threat of losing the playing time and starting position he had worked so hard to attain. Similarly, he feared coming off the field would denote a lack of commitment to the team and his responsibilities. He explains:

When you’re playing, especially as a starter, you will do anything to stay on the field with your brothers. If you tell someone about your concussions, the fear is that you will be removed from the game or practice and may never get back to where you were before the injury.

Lack of Return on Investment

In relation to the concern about loss of playing time, Hermano reiterated his fear that missing any time at all would compromise the amount of work and energy he had expended to achieve starting minutes in the games. To have worked all summer and practiced every day and then miss a few games in a season that is already short, there is a genuine concern about the threat of a lack of return on one’s investment. He argues:

No one wants to miss any playing time because of how short the season is compared to how much work you put in.
Lack of Encouragement to Report

*Hermano* shared that following his first concussion, everyone kept a very close eye on him and he sensed sincere concern about his wellbeing from the training staff and coaches. This feeling of concern and care empowered him to feel comfortable in reporting his symptoms; however, prior to his injury, he did not feel as supported. Moreover, he admitted that although he has felt supported to disclose his symptoms, an environment encouraging him to do so does not exist. He clarifies:

> Until after I sustained a concussion, I did not feel supported to tell anybody how weird I felt after taking some big hits. After my first concussion, I felt supported to report because everyone was so concerned about me but also because I began to realize it is the best thing for me and my health. I would not go as far to say I felt encouraged though, just supported.

Difference between Competition Levels in Reporting

As he has grown from middle school to high school, *Hermano* reported that his conceptualization of concussions as a sports injury has followed suit. He indicated that the lack of personal experience and education in middle school made him oblivious and afraid of the unknown that was concussions. However, throughout his personal encounters with concussions, he has learned more about expectations and consequences of concussions. He reflects:

> In middle school, I was scared of concussions because nobody knew anything about them. Now that I have experienced them myself, I am ready and much more prepared to handle them.
At the high school level, *Hermano* has witnessed a major distinction between the junior varsity and varsity teams in the reporting of concussion symptoms. He supported this claim by explaining the implications of missing playing time as a varsity athlete and giving a chance to one’s back-up or a junior varsity team member. The mentality that another great player is right behind you holds a lot of weight when considering whether to report concussion symptoms. Thus, he believes varsity players hide symptoms much more often than the junior varsity team members. He concludes:

I have seen how reporting of possible concussions occurs much more frequently at the junior varsity level, as there isn’t as much on the line as the varsity. When you miss any time at all on varsity, you run the risk of losing your position permanently, especially for the starters. In varsity football, the next great player is right behind you, breathing down your neck. You don’t want to lose everything you worked so hard to earn.

More specifically, within the varsity team, *Hermano* observed a similar lack of reporting for starting and non-starting players but for differing reasons. The starters, he admitted, are concerned with missing playing time and never getting their starting position back, but the bench players consider the threat of missing practices to prove themselves to crack into the starting lineup. He details:

Being a starter or not on varsity influences the hiding of concussion symptoms on our team but in different ways. Those who are starters have the most to lose, because they may permanently lose their starting position if the person behind them on the bench performs really well in their absence. Those on the bench have everything to gain from more reps in front of the coaches to finally solidify a
starting position. Missing time for them means starting back at square one in the pursuit for a starting position.

Team Perception of Concussions as a Sports Injury

Incidence of Occurrence

Based upon experiences on his team and his own unique experiences, Hermano guesses, “I have to say that athletes knowingly hide their symptoms more often than they should.” Specifically, on his own team, he has witnessed several of his teammates risk their health to stay in the game after a definite concussive blow to the head. He reports:

I have definitely witnessed several of my brothers risk their health and stay in the game after taking a hit I am sure had led to a concussion based on how they were acting. They definitely were not themselves after the hit.

When faced with these difficult situations on the field, Hermano reacted with concern but inaction. He did not want to tell his teammates to get checked out or tell his coaches/athletic training staff about the injured teammates for fear of being labelled a “tattletale” by his peers. He explicates:

Personally, I worried about them putting their health at risk, because I see these guys are my brothers. With that being said, I supported their decision to stay in the game, as I was not about to tell on my brothers. I did not feel like I was in the position to tattletale.
In total, he voiced his support for the medical staff and coaches in being willing to help an athlete understand the symptoms they are experiencing; however, the problem, he indicates, is more associated with his teammates’ psyches than any external forces. He denotes:

The medical staff and coaches are ready and willing to handle any concussion that occurs. The main problem is that it’s in the mind of the players on my team that they need to keep their symptoms hidden to themselves.

**Concussion Education**

*Hermano* asserted that throughout middle school and high school he has never learned about concussions through a structured education program. He remembered information sheets being sent home or given to his parents, but he never sat down to read them over. He acknowledges:

No we do not have any formal education program. I think some papers or pamphlets are sent home, but I can honestly say that I have never looked at those.

**Implications for Practice**

In assessing his observations over the past four years of playing football, *Hermano* advised that improvements in concussion reporting need to come from a supportive and encouraging environment created by the coaching staff as well as more people on the lookout for concussions so that the athlete can be removed and examined as soon as the hit takes place. He offers:

I wish that more players would tell how they are feeling and tell when they think they need attention. I think this starts with the coaching staff making it known that they want you to report how you’re feeling if anything at all is off. Also, I think high school football teams need more doctors and athletic trainers on the sidelines.
to be on the lookout for concussions. I came from a small school that only had one team doctor for all sports. With more people looking and policing, concussions can be recognized when they happen and prevent any possibility of hiding symptoms by immediately removing the player and putting them through the concussion protocol.
SOÑADOR:

Athletic Background and Concussion Profile

Subject Profile

Soñador is an 18-year-old high school senior who self-identified as White. He was a versatile athlete for his urban high school football team in the Midwest region of the United States, where he played on both the special teams and defensive units.

Motivations for Athletic Involvement

Soñador was introduced to football by his parents as soon as he could walk. Similarly, he began playing soccer at the age of five. He played both soccer and football casually throughout elementary school and into middle school; however, once high school arrived, he was forced to make a difficult decision and choose to only play one of his two sports because both were fall season sports. Thus, he decided to pursue football with a much more aggressive and purposeful attitude. He remarked that his decision was based in his view that football was more intertwined with his personal identity. He commented, “It’s just a part of who I am.”

Although his interest in sports was initially forced by his parents, he began to develop his own passion for participation because of the forced physical activity, thrill of competition, and many friendships he formed with his teammates. He explains:

My parents introduced me to sports at a really young age. Like I said, as soon as I could walk, sports became a big part of my life and have been the driving force behind me staying physically active. After my parents got me started, I made so
many different friends through football and loved the competition it provided, both against another opponent and in the fight for a starting spot on the best team.

He has yet to be offered a scholarship to play at the collegiate level, but he plans to play competitively next year whether he is afforded a scholarship or not. He provides:

Yes, I definitely want to play in college. Anybody who loves the sport wants to play forever. As unrealistic as it seems, nobody wants the dream to end. If I don’t get offered a scholarship, I will try to walk on at whatever school I select to go to next year.

*Personal Understanding of Concussions as a Sports Injury*

In addition to his innumerable leg injuries from playing soccer, *Soñador* has also sustained four concussions from playing high school football. From direct hits to the head or hitting his head on the ground, he recounts:

Yes, I have sustained four concussions, all during my high school football career. All of mine also occurred in practice rather than games which has been super frustrating. Either from being hit hard in the head by another player’s head, or twice my head was smashed into the turf while I was making a tackle.

With each concussion, *Soñador* noted that the recovery period lengthened and the associated symptoms worsened to the point where his most recent concussion this past season kept him out of football for two months. He shares:

After each concussion, the recovery periods were much longer each time and my symptoms were much more severe. My symptoms lasted only a couple days during the first concussion, but the next three concussions took weeks at a time.
for me to recover. The most recent one that occurred during a practice early this past season lasted two months for me to recover.

Reflecting on his concussive episodes and the time since, Soñador acknowledged more acute symptoms as short-term consequences of the injuries and more severe and influential symptoms in the longer term. He discloses:

In the short term, I experienced extreme fatigue, sensitivity to light and sound, and memory difficulties. More long term, I have dealt with crippling migraines and a much weaker memory that has made school harder to manage.

Throughout his four separate experiences with concussions, Soñador has learned about the severity of the injury and that everyone is susceptible to sustaining a concussion (no matter how invincible one thinks he is). He further provides:

I’ve definitely learned that concussions are no joke. No matter how many times I was told, I did not realize how much concussions would affect me short term and long term until they happened to me personally.

Despite learning a lot about concussions via his own personal experiences, one thing that has remained unchanged is how Soñador approaches the game. Although the initial period after each concussion made him a tad more wary of taking unnecessary shots to his head, he divulged that after this period of caution, he would always revert to his fearless, overly aggressive mentality of play. He reveals:

The first couple games back from a concussion, I was cautious of receiving any unnecessary hits to the head, but after a couple games, I would be back to playing without any fear of another concussion.
Having experienced concussions firsthand, Soñador has come to conceptualize a concussion as “a brain injury caused by a blow to the skull causing permanent damage in the brain” with associated symptoms like “sensitivity to light and sound, headaches, dizziness, memory loss, trouble focusing, fatigue, and sensitivity to future blows to the head.” He also dictated that there is no way for the victim of a hit to the head to self-diagnose a concussion or clear themselves from the injury; they must be examined by a medical professional to assess whether the sustained hit resulted in a concussion. He clarifies this view:

The only real way is to be cleared is to be examined by a trainer and go through the concussion protocol. An individual cannot clear themselves, no matter how many times they tell themselves they can.

**Life Lessons and Sport**

*Interpersonal Relationships and Team Dynamics*

Comparable to professional life, Soñador professed that he has grown in his ability to work within a team structure to achieve common goals by participating in sports. Working together to achieve, especially with people who have differing perspectives and views, is a valuable transferrable skill. He comments:

I think sports teach a lot of great values that can be translated into other aspects of life. To start, I would say I have learned a lot about teamwork, because I have only ever played team sports. I have learned how to work within a team to achieve big dreams.
Overcoming Adversity

Like the peaks and valleys of life, Soñador suggested that sports present a similar journey of great struggle and great reward. He stresses:

I would also say I have learned about perseverance. You go through ups and downs in sport, just as in life. During the hard times, you learn how to handle adversity and thrive on the other side.

Positive Role Models and Mentorship

Moreover, Soñador described the value of being coached by positive role models and mentors in sport. Having coaches who can impart wisdom about sport and more broadly about life is highly advantageous to one’s personal growth and development, especially during the critical years of middle school and high school. To that effect, Soñador informs:

The last thing I think I have learned is the importance of having good role models and mentors in your life that you can look up to and learn from. All of my coaches have been pivotal to my own personal development, as they have not only been invested in me as an athlete but also as a person.

Rationale for Symptom-Hiding

Soñador indicated that in addition to his four concussive episodes, he also endured several hits to the head that may have been diagnosable concussions; however, unless the hits were noticed by the coaches and athletic trainers, he kept these experiences to himself and under wraps. He shares:
Playing on special teams and defense, you constantly take knocks to the head, some much worse than others. But, with my love of playing and the thrill of the competition, I was totally against telling anybody about my experiences, unless they yanked me out of the game to put me through the concussion protocol.

*Possible Loss of Playing Time and Starting Position*

One reason for Soñador keeping these hits and the associated symptoms to himself was the fear that missing any time due to an injury would give an opportunity to his back-up to shine. Thus, there was an impending threat of not only missing playing time but also losing his starting position on the varsity team that he has worked so hard to earn. He urges:

I worked so hard to earn my spot on the varsity; there was no way my back up was going to take my spot because I had to miss reps due to an injury.

*Lack of Return on Investment*

In addition to possibly losing playing time as a result of a diagnosed concussion, Soñador was afraid that missing game time would compromise the investment of summer two-a-days and daily fall practices to earn those in-game minutes in a season that is short. All of the hard work, practice after practice, could prevent one from having meaningful game-time experiences until one successfully completes the return-to-play protocol if diagnosed with a concussion. He reports:

Also, the last thing I wanted was to miss any games with the season being so short.
Burden of Recovery

Furthermore, after sustaining his first concussion, Soñador worried about the burden on everyone involved (parents, trainers, coaches, teammates and himself) associated with a lengthy recovery period. He remarks:

I have hidden my symptoms because the recovery process always just seemed like such a burden.

Despite the aforementioned reasons for hiding his symptoms, Soñador insisted that everyone involved with the sport (parents, fans, coaches, trainers, etc.) were always supportive of him and genuinely concerned about his wellness. He admits:

Everybody involved with sports is always more worried about my long-term health and well-being than the game of football.

Difference between Competition Levels in Reporting

In his journey from middle school to high school football, Soñador denoted a perceptual shift in his view of concussions. During middle school, he offered that he felt quite invincible and never imagined that an injury such as a concussion would ever happen to him. But, in high school, after his invincibility was destroyed when he sustained his first concussion, he gained a respect for the severity of the injury. He concedes:

After personally being diagnosed with multiple concussions, I take them much more seriously now. But until then, I saw myself as invincible and was not an ounce concerned that they could happen to me.
At his high school, Soñador asserted that no major difference existed in the reporting of concussions between the junior varsity and varsity levels, as the athletic trainers and coaches “always take both team injuries quite seriously.” At each of these levels, however, there is a noticeable distinction in symptom disclosure between the starting players and those on the bench. The starters displayed greater tendencies to hide their concussion symptoms due to the threat of losing their starting position and status. To that end, he justifies:

   Especially if the player that replaced you while you were gone performed well, you did not get your starting spot back easily. This is always in the back of your mind, so you definitely didn’t want to give your back up an opportunity.

**Team Perception of Concussions as a Sports Injury**

*Incidence of Occurrence*

Soñador believes the incidence of symptom-hiding in youth athletics to be a pretty substantial problem. He speculates:

   Almost all of the time they think they might have sustained a concussion, I believe the athlete will hide their symptoms.

Specifically, on his own team, concussion symptom-hiding among his teammates is kept entirely private even from each other, and thus, he is unsure as to the level of frequency. He remarks:

   If any of my teammates were having symptoms, they hid them from everybody on the team to make sure there was no chance they would be pulled from the game. I have always been the same way. You tell no one until maybe way after the fact.
There exists a genuine encouragement and support from the training staff to report; however, concussions as an injury are viewed as weakness by the victim. In general, concussions are not discussed on Soñador’s team due to the stigma associated with that word. He declares:

They are taken very seriously by the athletic training staff. Even the slightest hint of a symptom and the trainers are right there checking you out. But within my team, concussions are perceived as an emblem of weakness. We don’t talk about that word at all.

Soñador acknowledged two major reasons as to why his teammates fail to report their concussion symptoms and get examined: college scholarships/recruitment and fear of letting the team down. He further explains:

One big factor has got to be the pressure of college athletic scholarships. If you are being considered at all for a scholarship, the last thing you want is for the recruits to see you spending your time on the sideline recovering from a concussion. Another concern is letting your team down by not being out on the field doing your job.

**Concussion Education**

In terms of concussion education, Soñador disclosed that he had never completed a formal concussion education program at his high school through the athletic department. In fact, all of his concussion education had come from a chapter in health class, despite efforts to provide students and parents with pamphlets and brochures. He asserts:

We have learned a little bit about concussions in health class, but our football team has never gone through any formal concussion education program. At our
first team meeting each season, there is a table set up with pamphlets you can read, but I mean no one is going to take the time to pick one up and read it.

**Implications for Practice**

In learning from his personal experiences with and observations of concussions, *Soñador* suggested the need for multimedia education materials that would pique the interest of high school teenagers as well as an increase in the number of individuals on the sidelines looking for potential concussive blows. He concludes:

> All high schools need a mandatory video all players have to watch before every season, because I think we would actually be interested in watching something like that rather than some pieces of paper. Also, when trainers see somebody take a blow to the head, even if the player claims he is fine, they need to get him off the field and make sure he is ok. More eyes on the sidelines would be incredible at catching almost everything the second the hit occurs, rather than trusting the honesty and initiative of the athlete to report.
**Competidor:**

**Athletic Background and Concussion Profile**

**Subject Profile**

*Competidor* is an 18-year-old high school senior who self-identified as White. He was a do-it-all football player for his *urban* high school in the Midwest region of the United States. Because of his successes in his high school career, he was recently awarded a full athletic scholarship to play collegiate football next year and continue the dream.

**Motivations for Athletic Involvement**

*Competidor* began his athletic journey in kindergarten when he was introduced by his parents to T-ball and basketball. It was not until his third grade year that his parents signed him up for the city’s “pee wee” football league. It was here that he developed a passion for sports that rewarded physical contact, because he was much bigger in stature than the other students in his class. Thus, he chose after his fifth grade year to quit playing basketball and baseball to focus entirely on football full-time. As he was the most physically advanced player on his teams, he was asked to carry the ball as the team’s running back and fullback. As he continued to lift weights and put on muscle, the coaches decided his sophomore year of high school to switch his position to the interior offensive line. In this new role, he thrived and was resultanty offered a scholarship to continue his football dream at the college level. This passion for athletics has been ignited by the ability to make lifelong friends and quench his thirst for competition. He remarks:

> I think first it stems from being a great place to meet new people. You get to meet a great group of guys with each team you play on. Everyone has a common interest in sports and so it’s super easy to relate to each other. Most of my best
friends are teammates from playing football. And also just as a competitive person, I find sports to be super exciting and thrilling.

*Personal Understanding of Concussions as a Sports Injury*

Despite never sustaining a concussion himself, *Competidor* has learned a concussion to be “a traumatic injury to the brain or bruising of the brain” with associated symptoms such as “loss of consciousness, severe headaches, memory loss.” He also commented that the concussed athlete appears noticeably off and dazed. He observes:

I’ve never experienced one myself, but having seen others in a concussed state, I have often seen a confused look to them. They look like they’re really out of it.

As there is sometimes a fine line between a possible concussion and just a bad knock to the head, *Competidor* provided that the only major way to tell if a teammate had a concussion was if they were knocked unconscious by a hit. Otherwise, the lines are too blurry to speculate as to what constitutes a concussion and what does not. He explains:

I would say it’s been hard to tell if a teammate of mine had a concussion or not after a hit unless they obviously got knocked out for a few seconds or so. When this happened on a couple occasions, the trainers immediately took them off the field to assess them. But, other than that, we’re hitting each other all the time, so it’s hard to tell what’s a minor concussion and what isn’t. You usually think nothing bad is ever going to happen from a little hit.

*Competidor* revealed that he may have experienced possible concussion symptoms in middle school, especially as the team’s focal point of the offense, but never told anyone. He offered that he did not believe this was due to hiding but more so as a result of a lack of education and understanding of what these experiences meant. As he began to learn more about concussions in
high school, he argued that he has not experienced any possible concussion episodes. He indicated that he has taken some aggressive knocks to the head that had him feeling different afterward, but they were not severe enough to warrant disclosure. He comments:

Well, we didn’t really learn about concussions until my sophomore or junior year of high school. There weren’t trainers telling you need to look for specific symptoms. So until then, I definitely might have had concussion symptoms that I didn’t know that’s what they were. But since my sophomore year and I learned a bit about them, I don’t think I have really hidden symptoms. You definitely take some pretty good shots to the head and get your bell rung and feel a little weird right after, but nothing too serious.

Furthermore, Competidor assured that the athletic training staff, parents, and coaches at his high school have been very supportive of athletes reporting concussion symptoms. He emphasized that because there were so many eyes watching the field, he believed very few concussions to actually slip through the cracks. Additionally, he disclosed that he is required to submit to a preseason baseline IMPACT test that tests for reactive times and general coherence. It is used during the season to assess whether or not one is significantly diminished in these metrics after taking a potential concussive blow to the head or neck. He informs:

Yea, I think definitely with the number of trainers we had, they were always on the lookout for concussions. We also took a preseason IMPACT test to get a baseline of our reaction times and such so that if something happened during the season, we could take the test again to compare to the baseline. The parents and coaches were also really good at looking out for anything off about players on my team if they took a hit to the head.
Life Lessons and Sport

Overcoming Adversity

The biggest takeaway *Competidor* shared that he has gained from his involvement in athletics is the ability to not only overcome adversity but also to thrive on the other side. He offers:

> I would say the biggest transferrable skill has to be learning how to fail and then how to succeed from failure. As an example, I was always one of the most athletic guys on my team earlier on playing football, because I was by far the biggest. I got a lot of minutes and reps with the football. But, in middle school and even more so in high school, everyone finally started catching up to my size. As a result, I didn’t get to play as much, which was really tough. But, through this, I learned that size wasn’t everything in the game of football, and that if I wanted to get back into a starting role, I needed to work for it. So, out of this adversity of not seeing the field as much as I wanted, I gained the motivation to be disciplined in working harder each day to better myself and give myself the best shot at starting again. Sure enough, when high school rolled around, I got more starting time back, and all the hard work paid off. This definitely translates to school and classes and knowing how to succeed after you fail or slipup.

Positive Self-worth and Self-confidence

On a more personal level, *Competidor* suggested that sports offer a positive environment for one to learn self-love and grow in self-confidence. When one succeeds in sports and is cheered on by fans, coaches, and teammates, one begins to view oneself and one’s capabilities in a more positive manner. He notes:
In terms of what I’ve learned about myself, I would say I’ve grown in my own self-confidence. When you do something well on the field, everyone is cheering you on and you get high-fives from your teammates. Seeing myself succeed on the field has translated into a viewing myself in a more positive light.

**Rationale for Symptom-Hiding on High School Team**

*Lack of Severity*

On *Competidor’s* team, a concussion is typically not perceived as being all that serious; thus, the athlete who thinks he might have sustained one does not report his symptoms, as he believes he will recover independently within the coming days. He professes:

> I think they just don’t think it’s that serious and that it will just go away on its own after a few days or so.

*Unnecessary Loss of Playing Time*

Another concern for the athletes on his team in bringing up concussions to the training staff was the possible over concern and overly cautious plan for recovery. The fear was that one would be kept out from playing much longer than was necessary to recover from the concussion; thus, this loss of playing time could compromise one’s starting position and amount of playing time going forward. To that effect, he supposes:

> Another thing is when athletes would bring up concussion talk to the trainer, they would almost like freak out about it. This would cause them to keep my teammates out longer than what was maybe necessary because they were maybe too cautious. So, there was a fear that you would unnecessarily be withheld for an extra-long time and that screws you over when you can’t play.
Difference between Competition Levels in Reporting

In his progression from middle school to high school football, *Competidor* indicated that he has become much more educated about concussions as an injury. In middle school, he shared that diagnosed concussions were extremely rare, because there was a major lack of education. Additionally, at that age, one feels invincible and does not ever consider a concussion happening to oneself. However, as he learned more about the injury throughout high school, *Competidor* felt more comfortable and more equipped to tell someone about his symptoms following a major blow to the head or neck. He considers:

I am definitely more open and educated to the problems of head injuries and their consequences. I guess I would say I take them a little more seriously. In middle school, it’s just not something you ever thought about. It almost seemed like it was rare for anyone to ever get diagnosed with a concussion. I’m sure kids did experience symptoms, but just never reported them (making concussions appear rare). As a twelve and thirteen year old, you don’t have the intelligence to properly look out for yourself. That’s where I think the parents, coaches, and trainers need to do a better job of being on the lookout to protect kids at that age.

Within the high school level of football, he further elaborated on a discrepancy in reporting between the varsity and junior varsity teams. He denoted that the varsity team had much more attention from the coaches, trainers, and surrounding community; thus, the sheer number of people tending to the varsity games and practices provided extra sets of eyes that made concussion reporting a much higher priority. The junior varsity, on the other hand, lacked the same attention and concern received by the varsity; resultantly, they had fewer concussions reported and identified. To that end, he clarifies:
I would say so just because there is much more emphasis on the varsity team. There are more coaches and more trainers on the lookout for the big Friday night varsity games. That is always the big show. The junior varsity team always seemed like more of the practice squad that nobody cared much about. So, I think more concussions were reported on the varsity team because of the number of people around looking out for concussions and the health of the players.

**Team Perception of Concussions as a Sports Injury**

*Incidence of Occurrence*

Based upon his observations on his own team, Competidor hypothesized that the occurrence of concussion symptom-hiding is a minor problem. He noted that in middle school, he believes they are hidden much more frequently because of a severe lack of concussion education. However, at the high school level, with greater awareness about the injury, many more concussions are reported and assessed immediately following a substantial hit. He ponders:

I would say definitely a little bit. Now, people are more aware of concussions as an injury and so that has helped. But, when I was younger and in middle school, I think they were hidden a lot. But, I’m not sure if they were purposely hiding them, or they honestly didn’t know that the symptoms they were experiencing were associated with a possible concussion.

On his own team, he predicted that several teammates have hidden symptoms and just kept playing to stay out on the field. He clarified, nonetheless, that no one can get away with any concussion that is overtly obvious to those watching the practice or game (i.e. the player gets knocked out). The symptom-hiding can only manifest from concussions that exist within the gray area of concussions. He assumes:
I feel like they definitely have. When you’re playing, you definitely get knocked out of it when you get hit hard. But, then you just move on to the next play. But I’ve never experienced anyone lose consciousness and then be able to keep playing right after.

As a general rule of thumb, concussions were not discussed on his football teams, unless the training staff or coaches made a conscious effort to bring them up. Typically, the coaches preached a next-play mentality and a need to fight through any minor aches and pains. He also pointed out a distinction in the words hurt and injured when deciphering an appropriate time to exit the game and suggest examination from the training staff. He proposes:

I would say it’s somewhat seen as a serious injury, but until you experience one, it’s hard to think much about concussions or know what they’re like. The only time they were brought up were if the coaches or trainers said something about them. But, we were far more worried about playing than talking about concussions. We all just had the mentality that you have to play through the pain if you’re a little banged up. There’s a big difference in being hurt and being injured.

**Concussion Education**

In terms of concussion education, *Competidor* revealed that the only education he received from his high school athletic department was in the form of paper documentation. Such a lengthy packet was not something he and his teammates were interested in perusing. Instead, they continued with a mentality of invincibility and deciding not to worry about injury. He discloses:

Associated with the IMPACT testing of our reaction times, the trainers would give us a packet with the symptoms of a concussion blah, blah, blah and how to
identify if you had sustained one and stuff. But, I never took the time to read this stuff over and neither did my buddies. We kind of just brushed the info aside to be honest. As high schoolers, we have this mindset that we’re invincible, and it’s never going to happen to us. Since you don’t think it will ever happen to you, why spend any time worrying about it? That was kind of the general mindset.

**Implications for Practice**

In relation with the aforementioned lack of education, *Competidor* exclaimed that several changes need to be considered to prevent so many concussions from going undiagnosed and unexamined. He preached two major considerations: (1) a more engaging and relatable education program that targets the teenage audience for whom it is intended and (2) the need for coaches to be more active in leading concussion-focused discussions and openly communicating their own views on reporting concussion symptoms. Such discussions provide athletes with more clarity on what is expected from them in regards to reporting and allows athletes to more comfortably entrust both the coaches and trainers with their symptoms. He concludes:

> I would say a demonstration or media presentation that would keep people more engaged with concussion education would help, because clearly handing athletes papers to read is not working. I would also say there needs to be a “real talk” discussion initiated by our coaches. If the coaches have that human, emotional attitude that they genuinely care and think concussions are serious, then the players will be more willing to listen and trust telling them about their symptoms. You’re always scared to tell the coach that you think you’re hurt. And if he’s a hard a**, he’ll tell you that you’re not injured, you’re just hurt and need to rub some dirt on it.
CHAPTER 4: THEME IDENTIFICATION

Cross-Case Analysis

In addition to case-by-case co-constructions and meaning-making synopses, the researcher also conducted cross-case analyses to delineate emerging themes and grounded conceptualizations present across the cases. Cross-case analysis focused on three specific groups: (1) all research participants; (2) middle school student athletes; and (3) high school student athletes. In so doing, the researcher hoped to identify emerging themes and commonalities between all interviewed participants as well as the possible uniqueness of each competition level, middle school and high school athletics.

Global Analysis: All Participants

Using selective coding (Glaser & Strauss, 1967) to process the relationality among themes across all participant cases and common to all entities, three major foci were identified: (1) motivation for athletic participation and life lessons learned in sport; (2) psychosocial epistemology of concussion; and (3) self-authored concussion symptomology. Extreme caution was taken to ensure that all themes and categorical representations of interview transcriptions were dictated directly by the participant voice.

MOTIVATORS FOR ATHLETIC PARTICIPATION

Interview Question: Why have you chosen to play sports?

Although much of the interview process emphasized the concussion phenomenon in sport, all individuals also thematically presented self-authored reasons for involving themselves in sport and life lessons learned because of this involvement (Table 4.1). Motivators (subthemes) for athletic participation included: (a) maintenance of physical health and wellbeing; (b) thrill of competition; (c) ability to meet new people; (d) brotherhood; and (e) outlet from external stressors.
<table>
<thead>
<tr>
<th>Theme/Subtheme</th>
<th>Interviewees Mentioning Theme/Subtheme</th>
<th>Total Exemplar Quotes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Motivators for Athletic Participation</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maintenance of Physical Health and Wellbeing</td>
<td>9</td>
<td>10</td>
</tr>
<tr>
<td>Thrill of Competition</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>Ability to Meet New People</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>Brotherhood/Fratal</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Outlet From External Stressors</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td><strong>Life Lessons Learned From Sport</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interpersonal Relationships and Team Dynamics</td>
<td>9</td>
<td>11</td>
</tr>
<tr>
<td>Overcoming Adversity</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>Practice as the Impetus for Success</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Personal Discipline</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Catalyst for Personal Dynamism</td>
<td>4</td>
<td>4</td>
</tr>
</tbody>
</table>

Table 4.1. Self-authored motivators for involvement in sport and life lessons learned from participation.

**Maintenance of physical health and wellbeing**

One common motivator for athletic involvement reported by the subject pool was the opportunity to maintain one’s physical health and wellbeing. This motivator was mentioned 10 times in nine of the interviews. Phrases such as “maintain good physical health and shape,” “the ability to stay physically active and run around,” and “the driving force behind me staying physically active” permeated the interviews.

**Thrill of competition**

The thrill of competition emerged as a subtheme in five of the 10 interviews. The thrill of competition can be defined as the fulfillment of a yearning for competition. Quotes like “fulfill
my love for competition,” “as a competitive person, I find sports to be super exciting and thrilling,” and “loved the competition it provided, both against another opponent and in the fight for a starting spot on the best team” revealed this unique meaning unit.

*Ability to meet new people*

Seven of the interviews mentioned the ability to meet new people as a reason for playing sports. Examples such as: “to meet new people both similar and different than you as well as make lifelong friends,” “I made so many different friends through football,” “Everyone has a common interest in sports and so it’s super easy to relate to each other. Most of my best friends are teammates from playing football,” and “I have gotten to know people from all over the world and learn about people different than me” dictated this subtheme.

*Brotherhood*

Three individuals presented the development of a brotherhood as an impetus for involvement. This brotherhood and the associated fraternal spirit was presented as: “I wanted to have the brotherhood that comes with organized sports” and “You get to meet a great group of guys with each team you play on.”

*Outlet from external stressors*

Three subjects likened sports to be an outlet from various external stressors by specifically using phrases as: “Sports also give me a break from thinking about school all the time and that stress,” “I also like doing sports to have something else to think about than just school all the time. It’s like an outlet from my school life,” and “release my frustrations and anger from school.”
Interview Question: What have you learned about yourself and/or life through sports?

Another major motivator for athletic involvement proved to be the number of broader life lessons one can take away from sport, especially team sports. Subjects presented so many specific and unique perspectives regarding this category that it was denoted as its own theme with associated subthemes for support including: interpersonal relationships and team dynamics, overcoming adversity, practice as the impetus for success, personal discipline, and catalyst for personal dynamism.

Interpersonal relationships and team dynamics

Nine of the 10 participants mentioned interpersonal relationship skills and team dynamics as an applicable life lesson learned in sport. This subtheme can be defined as growth in the ability to connect with others who are both similar and different from oneself and to learn to work within the context of a team to achieve a common end goal. Quotational justification of this subtheme is presented by Fuerte, for example, when reflecting, “I have also learned how to work on a team, even when I don’t get along with some of my teammates. It’s best to worry about the team’s mission.” Similarly, Luchador mentioned his growth in cultural awareness and competence with his international teammates by sharing, “I have learned how to work with so many different people to get the job done and succeed together.”

Overcoming adversity

Learning how to overcome obstacles and handle adversity was another recurring subtheme. Six individuals commented on this meaning unit that was defined as roadblocks
impeding one’s ability to attain desired end goals. Competidor anecdotally depicted this subtheme’s action in sport and its broader importance for his development of self:

In middle school and even more so in high school, everyone finally started catching up to my size. As a result, I didn’t get to play as much, which was really tough. But, through this, I learned that size wasn’t everything in the game of football and that if I wanted to get back into a starting role, I needed to work for it. So, out of this adversity of not seeing the field as much as I wanted, I gained the motivation to be disciplined in working harder each day to better myself and give myself the best shot at starting again. Sure enough, when high school rolled around, I got more starting time back, and all the hard work paid off.

**Practice as the impetus for success**

Another common thread was the notion that practice is the impetus for future success. Without consistent practice, one fails to hone and master the skills necessary to achieve desired success. Three individuals conceptualized this subtheme as doing what one needs to do every single day to better oneself and resultantly better the team’s opportunity for success. Aprensivo presented this notion by explaining his own belief that anything is possible; however, one must prioritize daily action and practice over passivity for this phrase to be affirmed. He shares, “I have learned that I can do anything I can set my mind to when I practice.”

**Personal discipline**

Discipline was also mentioned by three of the 10 participants and perceived to be synonymous with personal accountability. Disciplinado, for example, preached the importance of discipline for oneself as well as one’s team by suggesting:
I have learned that I do really well when I am forced to be in disciplined situations, both in the team setting (where it’s not about you it’s about what you need to do for the good of the team) as well as individually (where you have to hold yourself accountable to give your best). I would say that I have learned about the discipline to do what you need to do for the bettering of the team, even if it’s something you don’t want to do.

_Catalyst for personal dynamism_

Sports were also viewed as a catalyst for personal dynamism by four subjects. As a catalyst for personal dynamism, sports offer ample opportunity for personal growth and transformation, as one begins to understand one’s self-perceived identity and purpose by being put in various situations. _Socorro_ recounted an episode with mono that forced him to reevaluate his self-perceived role within the team structure. He tells:

I would say I have grown the most in my own ability to lead other people and to work with other people. I also felt like I have grown a lot over the course of this past year. Last fall, I got really sick with mono, so I couldn’t lift or practice or do anything with the team for two months. So, I had all of these dreams of being a full-time starter and being a really good athlete for our team. And I had to learn to accept that dream was going to have to go away because I lost all of my skill right before the season started because I missed so much time. And I think that really helped me to grow a lot because I learned a lot more of the transferrable concepts of sports. I learned to care about developing the younger players on our team so that they could fit into the team and work well. And I think I began to finally
realize that it’s not all about the end goal of getting a bunch of playing time as a starter.

PSYCHOSOCIAL EPISTEMOLOGICAL CONCEPTUALIZATION OF CONCUSSION

Interview Question: Define the word “concussion.”

Although the latest ISCC medical and scientific definition of a “concussion” exists as a complex pathophysiologic injury to the brain engendered by biomechanical forces (McCrory et al., 2013), the psychosocial construction and personal definition of a concussion provided by each participant impacts how they relate to the concussion experience (Table 4.2). As such, how each individual conceptualizes and makes meaning of concussion in sport readily predicts how he will interpret a possible concussion episode. If the symptom manifestation following a blow to the head or body does not match one’s self-perceived definition of a concussion, then one may fail to report possible concussion symptoms on the basis that it is not encompassing of one’s conceptualization of concussion. For example, if one believes one must be knocked unconsciousness to have sustained a concussion, then one may not report one’s possible concussion symptoms of headaches, nausea, and dizziness.
### Personal Definition of Concussion as a Sports Injury

<table>
<thead>
<tr>
<th>Name</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aprensivo</td>
<td>any kind of serious head injury that results in a temporary or permanent loss of mental ability or memory</td>
</tr>
<tr>
<td>Guerrero</td>
<td>Blacking out. Having a daze on where you’re like “whoa, I was just in the game. What happened?” Or having a headache so bad you can’t move for hours due to the pain.</td>
</tr>
<tr>
<td>Socorro</td>
<td>trauma or bruising of the brain due to force or contact to the head</td>
</tr>
<tr>
<td>Disciplinado</td>
<td>when you get hit in the head really hard and you become disoriented. You also have trouble remembering certain things.</td>
</tr>
<tr>
<td>Hermano</td>
<td>a bruise or contusion to the brain from a hit to the head</td>
</tr>
<tr>
<td>Soñador</td>
<td>a brain injury caused by a blow to the skull causing permanent damage in the brain</td>
</tr>
<tr>
<td>Competidor</td>
<td>a traumatic injury to the brain or bruising of the brain</td>
</tr>
<tr>
<td>Fuerte</td>
<td>a blow to the head that can lead to fatal head injuries</td>
</tr>
<tr>
<td>Espíritu</td>
<td>a mild or it can be an extreme head injury that comes from collisions</td>
</tr>
<tr>
<td>Luchador</td>
<td>when you get hit hard in the head and your brain gets injured</td>
</tr>
</tbody>
</table>

**Table 4.2. Self-conceptualization of concussion.**

CONCUSSION SYMPTOMOLOGY

Interview Question: List as many symptoms of a concussion that you can think of.

In addition to one’s self-conceptualization of a concussion from a definition perspective, one’s epistemological and personal construct of the injury’s symptomatology will also predict how one interacts with a possible concussive blow (Table 4.3). Of the 10 subjects, nine mentioned headaches, five mentioned dizziness and memory dysfunction/loss, and four provided confusion/disorientation as the most recognizable symptoms of a concussion. All other symptoms were offered by fewer than four participants. To that effect, if one’s concussion symptom manifestation following a blow to the head or body does not fit within one’s self-constructed symptom list associated with a concussion, then one may interpret this hit as a non-concussion. The ISCC-derived concussion symptoms provide a consensual diagnostic for medical professionals; however, one’s ultimate personal understanding of concussion symptoms will predict one’s interpretation of possible concussion experiences.
<table>
<thead>
<tr>
<th>Concussion Symptom</th>
<th># of Interviewees Mentioning Symptom</th>
</tr>
</thead>
<tbody>
<tr>
<td>Headaches</td>
<td>9</td>
</tr>
<tr>
<td>Dizziness</td>
<td>5</td>
</tr>
<tr>
<td>Loss of Consciousness</td>
<td>3</td>
</tr>
<tr>
<td>Memory Dysfunction/Loss</td>
<td>5</td>
</tr>
<tr>
<td>Disrupted Sleep/Fatigue</td>
<td>2</td>
</tr>
<tr>
<td>Lightheadedness</td>
<td>1</td>
</tr>
<tr>
<td>Impaired Vision</td>
<td>2</td>
</tr>
<tr>
<td>Nausea/Vomiting</td>
<td>3</td>
</tr>
<tr>
<td>Body Pain/Numbness</td>
<td>1</td>
</tr>
<tr>
<td>Confusion/Disorientation</td>
<td>4</td>
</tr>
<tr>
<td>Photophobia/Hyperacusis</td>
<td>1</td>
</tr>
</tbody>
</table>

Table 4.3. Understood symptomology of concussion manifestation.

**Middle School Thematic Synopsis**

After thorough cross-case review of all participants, the four middle school athletes and six high school athletes were analyzed independently for assessment of meaning-making unique to each competitive level of sport (Okumu, 2014). Separating the participants by competition level allowed for investigation of similarities and differences in the data based on one’s middle school or high school status. Four major categorical units were processed via theoretical coding at the middle school level as determined by open and selective coding processes: (1) personal rationale for symptom-hiding; (2) incidence of occurrence; (3) team perception of concussion as a sports injury and (4) level of concussion education received.

**RATIONALE FOR CONCUSSION SYMPTOM-HIDING**

Interview Questions: (A) Have you ever knowingly hidden concussion symptoms after sustaining a knock to your head or neck during a sporting event? (B) If so, why in that moment did you choose to hide your symptoms?
Self-authorship as a means of reflection on personal choices to hide concussion symptoms offers a unique glimpse into the psyche of the student athlete and can elucidate possible areas for improvement within each competition level. Three major themes with various subthemes were identified by the introspective discourse provided by each of the four middle school athletes: (1) external and internal perceptions of walking away from the fight; (2) possible loss of playing time/starting position; and (3) lack of support and encouragement to report (Table 4.4). All major themes required at least two of the four subjects (50%) to provide quotational support to be verified.

<table>
<thead>
<tr>
<th>Theme/Subtheme</th>
<th>Interviewees Mentioning Theme/Subtheme</th>
<th>Total Exemplar Quotes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>External and Internal Perceptions of Walking Away from the Fight</strong></td>
<td>Letting the Team Down</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Sign of Weakness/Unmasculine</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Consequential Bullying</td>
<td>2</td>
</tr>
<tr>
<td><strong>Possible Loss of Playing Time and Starting Position</strong></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td><strong>Lack of Support and Encouragement to Report From…</strong></td>
<td>Teammates</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Medical Staff</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Coaching Staff</td>
<td>3</td>
</tr>
</tbody>
</table>

Table 4.4. Self-authored rationale for concussion symptom-hiding among middle school participants.

External and internal perceptions of walking away from the fight

A major concern that pervaded the stories was the preoccupation with the potential external and internal perceptions of oneself for walking away from the fight and reporting one’s concussion experience. Within this broader theme, three subthemes dictated the aforementioned
larger theme: (1) fear of letting the team down; (2) fear of being perceived as weak or unmasculine; and (3) the threat of potential bullying and name-calling.

*Fear of letting the team down*

Two of the four interviews mentioned the threat of letting the team down and the associated guilt as a concern for disclosing concussion symptoms. Letting the team down was defined by these two participants as: the struggle to carry on and be there for one’s team at all costs; and one wants to avoid the potential guilt that would be associated with not doing one’s part for the success of the team, especially if the team ultimately loses. *Disciplinado*, for example, conceptualized this internal pressure to carry on when sharing, “I would say a big one has got to be the passion to carry on. You don’t want to be the one to let down the team.” Additionally, *Espíritu* relayed more directly, “You were letting the team down if you couldn’t go back in [the game].”

*Sign of weakness/unmasculine*

Another consideration was the external perception of self as weak or unmasculine that could accompany the reporting of his symptoms. All four interviews mentioned this subtheme in varying capacities. The participants provided considerations of the potentially negative image of self and one’s masculinity being called into question by coming out of the game with concussion symptoms instead of fighting through them. *Disciplinado* explained his view that “you don’t want to look like you are a baby or wussy and are one to easily give up because of a little injury.” Luchador similarly felt threatened by the potential perception of weakness when saying, “I also didn’t want people to think I was weak and couldn’t handle the physicality.” *Espíritu*, on the other hand, provided additional concerns for his manhood being called into question:
Also, you definitely didn’t want others to think you couldn’t shake off the big hits. I didn’t want people to think I was weak and not manly enough.

*Consequential bullying*

A final point of commonality presented in two of the four interviews was the urge to keep symptoms private in order to avoid the bullying and name-calling from teammates and coaches that would almost certainly accompany disclosure. *Luchador* reminisced on a bullying experience after his first two concussions that severely impacted his sense of self:

After my first concussions and missing so much, my coach embarrassed me in front of the team and called me a wuss.

In relation to *Luchador*’s experience, *Fuerte* indicated:

I mainly didn’t tell anyone about my symptoms because I didn’t want to get made fun of for being weak and a crybaby who goes to his parents when he gets hit.

*Possible Loss of Playing Time and Starting Position*

The second major theme for symptom-hiding was the threat of losing playing time and one’s starting position by disclosing possible concussion symptoms. Two of the four middle school athletes expressed fear that reporting symptoms could jeopardize their chance to start for the team and potentially reduce their in-game minutes. *Fuerte* identified this concern as:

I also didn’t want to stop being a starter on defense and miss any of the playing time that I deserved.

Espíritu similarly expressed the fear that he would miss the entire season of playing time if he came forward with his symptoms:

I was afraid that I could miss the entire season if I told someone about how I was feeling.
Lack of Support and Encouragement to Report

Finally, several of the athletes exposed a culture within the team that failed to support or encourage concussion reporting, specifically from one’s (1) teammates; (2) coaching staff; and (3) medical staff.

Lack of support to report from teammates

Two middle schoolers expounded on a lack of encouragement from their teammates to report a possible concussion. This discourse proved to be quite intertwined with the external perception of letting the team down as well as potential bullying. Espíritu, for example, mentioned:

But, my coaches and my teammates would look down upon you if you came off the field with an injury because you were letting the team down if you couldn’t go back in.

Fuerte, however, expressed his fear of being bullied by his peers if he told them anything about a possible concussion. He stated: “I also know my teammates will just make fun of me if I tell them anything is wrong.”

Lack of support to report from coaching staff

The coaching staff seemed to be an even more prominent group that provoked symptom-hiding due to the team culture they created. Again, the stigma surrounding a concussion and its associated external perceptions permeated the discussion of coaches as a non-supportive entity. Three of the four athletes felt unsupported to share a possible concussion with their coaches. This was best illustrated by Fuerte when he expressed his perception of the coaches’ collective attitude toward concussions, “My coaches don’t really care because they just want to win.”
Lack of support to report from the medical staff

The third party responsible for the lack of support within the context of the team dynamic was revealed to be the medical staff, or the lack thereof. Three of the four middle schoolers reported that their schools did not have a medical presence of any kind (doctor, athletic trainer, etc.) on the sideline. This ultimately leaves the student athlete with the power to choose whether or not to report. This was summed by Luchador in sharing, “We also don’t have medical people at my school, so we have to be the ones to report our injuries.”

INCIDENCE OF OCCURRENCE

Interview Question: How often do you believe athletes knowingly hide their concussion symptoms?

The four middle school participants consensually noted a high level of occurrence of concussion symptom-hiding in sport based on personal experience and observation of their own teams. Table 4.5 provides a summative glimpse of incidence using quotes from the four middle school student athletes suggest a possibly substantial occurrence of symptom-hiding in middle school sports.

<table>
<thead>
<tr>
<th>Name</th>
<th>Quote</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disciplinado</td>
<td>a good portion of the time. Probably around half of the time athletes will hide their symptoms</td>
</tr>
<tr>
<td>Fuerte</td>
<td>I believe most athletes have a concussion at least once every sports season because of how competitive and physical things get on the field.</td>
</tr>
<tr>
<td>Espíritu</td>
<td>I would say symptoms are hidden quite often. Like I would say most of our team has had one and just never got it checked out.</td>
</tr>
<tr>
<td>Luchador</td>
<td>happens a lot more than it should</td>
</tr>
</tbody>
</table>

Table 4.5. Incidence of concussion symptom-hiding in sport based on personal experience and observation among middle school participants.
TEAM CONCEPTUALIZATION OF CONCUSSION

Interview Question: What is the general perception of concussions as a sports injury on your football team?

Each of the four middle school participants revealed a team culture that generally exhibits silence and refrainment from open and transparent concussion discussion (Table 4.6). Several reasons for the silence pervaded the interviews including possible perception of weakness, feelings of invincibility/lack of concern, and potential for bullying and embarrassment. A variety of the phrase “We don’t talk about concussions on our team” was displayed in some capacity in all of the participant’s descriptions of their team, suggesting silence as a major theme present in the middle school team dynamic.

<table>
<thead>
<tr>
<th>Middle School Team Conceptualization of Concussion</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Disciplinado</strong></td>
</tr>
<tr>
<td>I would say concussions are only taken seriously if you come forward and tell the coach and trainers that you are not okay. You have to be the one to initiate it and say that you are not fine, you are not okay. However, if you tell the coach, “Coach, I’m fine. I’m good. I’m ready to go,” our coach will listen, let it go and put you right back in the game to keep playing.</td>
</tr>
<tr>
<td>Concussions are not something we talk about. If a player were to have a concussion, there would be talk to that player about how they’re doing with the recovery but definitely no discussion about concussions as a whole.</td>
</tr>
<tr>
<td><strong>Fuerte</strong></td>
</tr>
<tr>
<td>My team never talks about concussions. Nobody on my team suspects they will ever get a concussion or that it’s impossible for any of us to get one. If someone were to have one, they are seen as weak because they can’t take a hit so it’s embarrassing to talk about if you have one or have had one.</td>
</tr>
<tr>
<td><strong>Espíritu</strong></td>
</tr>
<tr>
<td>Well we just don’t talk about concussions. I don’t think any of us think it can happen to us since we haven’t had anybody get diagnosed with one, so we just kind of push it aside and not worry about it happening.</td>
</tr>
<tr>
<td><strong>Luchador</strong></td>
</tr>
<tr>
<td>We don’t really talk about concussions. I think after what I went through, my teammates now realize it could happen to them too. But it’s not something we bring up because we don’t want people to think we are weak and not a real football player.</td>
</tr>
</tbody>
</table>

Table 4.6. Middle school team understanding of and atmosphere surrounding concussion as a sports injury.
LEVEL OF CONCUSSION EDUCATION

Interview Question: Does your team have an education program about concussions that you have to go through before the season starts?

All participants were asked to describe the extent of concussion education they had received from their coaches, medical staff, and/or athletic department in their time playing middle school football. Based upon the personal descriptions provided by the participants in Table 4.7, it was consensually determined that structured concussion education is essentially non-existent at the middle schools attended by these individuals. Three out of the four subjects offered that the extent of their concussion knowledge is what they have absorbed secondhand through their concerned parents. Disciplinado mentioned that his school might send home an information packet, but he was disinterested in taking time to read it over.

<table>
<thead>
<tr>
<th>Extent of Concussion Education</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disciplinado</td>
</tr>
<tr>
<td>No, I have never received education about concussions. If there is anything, there might be an informational packet that is sent home to the parents, but it’s not something I have read.</td>
</tr>
<tr>
<td>Fuerte</td>
</tr>
<tr>
<td>I have only learned about concussions from what my parents have taught me. Our team doesn’t even have an athletic trainer or team doctor. Some of the parents of kids on my team are doctors so they are the ones that can tell if we need to get checked. But, no I only know what my parents say about concussions.</td>
</tr>
<tr>
<td>Espíritu</td>
</tr>
<tr>
<td>We don’t have any education like that [structured program]. Since my parents are pretty worried about concussions, they have taught me about some of the symptoms and stuff. But I have never been taught about them in school or from my coaches or anything.</td>
</tr>
<tr>
<td>Luchador</td>
</tr>
<tr>
<td>We do not have any education program. I only know about concussions from what the doctor told me when I got diagnosed and from what my parents have told me, but our coaches don’t talk about them at all and our school doesn’t require anything like that I don’t think.</td>
</tr>
</tbody>
</table>

Table 4.7. Status of education presentation in middle school athletics.
High School Thematic Synopsis

At the high school level, the same four major categories were assessed aggregately for possible emerging themes: (1) personal rationale for symptom-hiding; (2) incidence of occurrence; (3) team perception of concussion as a sports injury; and (4) level of concussion education received. Each category was also considered against the categorical dictations provided by the middle school participants to determine if unique differences as well as similarities exist between the two competition levels.

RATIONALE FOR CONCUSSION SYMPTOM-HIDING

Interview Questions: (A) Have you ever knowingly hidden concussion symptoms after sustaining a knock to your head or neck during a sporting event? (B) If so, why in that moment did you choose to hide your symptoms?

The language provided in the interviews by the six high school athletes dictated five major themes and associated subthemes for choosing to hide concussion symptoms: (1) external and internal perception of walking away from the fight; (2) possible loss of playing time and starting position; (3) lack of severity perceived in concussions as a sports injury; (4) lack of support and encouragement to report from various external parties; and (5) lack of return on the investment of time and energy. At least three of the six high school athletes (50%) must have provided an exemplar support quote for a theme or subtheme to be verified as a meaning unit.
One pervading thread throughout the dictations was the concern for the external and internal perceptions of self for choosing to walk away from the fight. Two distinguishable subthemes composed this broader emergent theme: (1) fear of letting the team down and (2) concussions being a sign of weakness.

**Fear of letting the team down**

Four of the six subjects mentioned their concern for letting the team down as a contributor to personal concussion symptom-hiding. Letting the team down was determined by these four individuals to be an expectation among one’s coaches, fans, and teammates that one will fight through anything to ensure the team’s success by maintaining a will-to-win-the-game-
at-all-costs mentality. Failure to do so may result in disappointment and a loss of respect from those playing and watching the game. To that effect, Aprensivo declared:

It has got to be the will to win the game, because of the mere fact of the consequences of losing. The eventual disappointment from parents, coaches, and players puts all of the blame on you for not being able to play your part for the team. I think this is the first thing that athletes think of after they sustain any injury but especially a possible concussion.

Similarly, Guerrero voiced his concern for not performing his responsibilities for the success of the team:

I would be backing down from who I am, not be able to help my teammates continue the fight, and risk losing everything I worked so hard to get.

Concussions as a sign of weakness/unmasculinity

Another major point of concern from three of the participants was the external perception of a concussion as a sign of weakness or a lack of masculinity. Leaving a game with concussion symptoms may cause one to be perceived as weak, inferior, and someone who gives up easily. Guerrero summarized this definition when he articulated:

If I come out of that game, they are going to see me as the guy that walked away from the fight. I mean unless it’s something serious, you got to keep fighting. Having everyone look down upon you for walking off the field makes you question why you would leave the fight for something so minor.
Possible Loss of Playing Time and Starting Position

The second major thematic unit offered by the cohort was the threat of losing playing time or even one’s starting position by coming out of a game or practice with possible concussion symptoms. All six participants expressed this fear in different ways. For example, Hermano reiterated his fear of never returning to his pre-normal status within the team dynamic:

When you’re playing, especially as a starter, you will do anything to stay on the field with your brothers. If you tell someone about your concussions, the fear is that you will be removed from the game or practice and may never get back to where you were before the injury.

Soñador, however, viewed a concussion as a chance for his backup to outshine him in his absence:

I worked so hard to earn my spot on the varsity; there was no way my back up was going to take my spot because I had to miss reps due to an injury.

Injury Lacks Severity

In addition to the aforementioned themes that were similar to the middle school cohort, one new theme that was provided by the high school participants was the notion that the injury is not seen as serious enough to report. Four of the six mentioned this feeling of normality rather than injury as a reason for keeping concussion symptoms private. Socorro more specifically explained that because his personal definition of a concussion did not match his experience following a possible concussive blow to his head as a result of feelings of normality, he did not feel the need to report his symptoms. He offered:
I guess the reason I didn’t come forward with how I was feeling was because I felt like I still had a normal range of abilities, normal mental function and everything else. And I guess if it were more significant from my vantage point, I would have probably decided to report.

On his team, Competidor shared more succinctly that the injury is seen as something that will heal quickly and independently of medical assistance:

I think they just don’t think it’s that serious and that it will just go away on its own after a few days or so.

Lack of Support and Encouragement to Report

Several subjects in the high school group revealed a culture on their teams that existed whereby several influential individuals failed to encourage concussion reporting: (1) one’s teammates; (2) the coaching staff; and (3) one’s parents.

Lack of support to report from teammates

Four of the six provided that their teammates were a source of influence in promoting concussion nondisclosure due to fear of the resultant perception of self from one’s peers. Socorro explained the lack of trust due to the fear of response:

I don’t think I would consider telling any of my coaches or teammates due to a concern with how they might respond.

Similarly, Guerrero expressed his fear for how he would be perceived by his teammates and other external parties. He mentioned:
I feel that the parents, my buddies, and my coaches will look down upon my ability to compete and fight if I were to come out of the game. If I come out of that game, they are going to see me as the guy that walked away from the fight.

Lack of support to report from the coaching staff

The coaching staff was another major entity whose influence had affected the concussion reporting of four individuals in the high school group. The coach was viewed by the student athletes as the ultimate leader on the team and in charge of things such as playing time and starting positions. Guerrero feared that the coaching staff would perceive him differently if he reported his concussion experiences:

I always play for myself, but to be put down especially by the parents, coaches, and my friends who I am playing with makes me question why I would walk away from the fight.

Aprensivo suggested that the lack of concern for the injury from the coaching staff was off-putting and created a climate of non-reporting:

Additionally, I don’t think some of the people around me were asking the right questions because I would repeatedly get asked “Are you ok?” This is the easiest question to answer; of course, I am going to say I am ok and keep playing.

Lack of Return on Investment of Time and Energy

A final theme that differed from the three themes dictated by the middle school group was the possible lack of return on investment of energy expenditure. This was defined by four of the athletes via quotational support as the ratio of practice to games during a season. An athlete
spends two-a-days starting in the summer and practices nearly every day for only a handful of games, especially if the team does not qualify for the playoffs. Thus, it is seen as too much of a risk to miss even a single game because of the amount of effort put in to play in the games. To this effect, Socorro summarily noted:

One [factor] would be the ratio of practice to playing time. For example, on our team, we practice, lift and condition so hard all summer. And then when the season really starts, we practice four days a week for extensive amounts of time and then only play in a game for an hour or maybe two tops. There’s so much time that you put in for such a small amount of game-time minutes. When an athlete gets concussed in a sport like this, they are probably going to hide it because they don’t want to see all the game days they worked so hard for pass on by without being able to play in them and have to watch from the sidelines.

INCIDENCE OF OCCURRENCE

Interview Question: How often do you believe athletes knowingly hide their concussion symptoms?

Based on personal experience and observation among his own team, each participant suggested his own narrative on the incidence of concussion symptom-hiding in high school football (Table 4.9). Four of the six participants explained this as a serious problem; however, the other two student athletes identified symptom-hiding as a minor issue that has steadily improved since middle school (where symptom-hiding occurred often) with greater awareness of concussion as a sports injury.
Incidence of Symptom-Hiding

<table>
<thead>
<tr>
<th>TEAM</th>
<th>Statement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aprensivo</td>
<td>When I was younger, I would say that kids would hide their symptoms all the time, but now that we have athletic trainers and just greater overall awareness of concussions, I would say that athletes are more likely to report symptoms. I think college and professional athletes are the worst at reporting because of what is on the line for their future careers and the intense competition that is involved in those games.</td>
</tr>
<tr>
<td>Guerrero</td>
<td>I would say that every game or at least every other game there was some kid who was out there hiding their concussion symptoms. They would just keep walking, keep fighting through it. Usually the varsity starters, those who are the big time hitters, are the ones who hide it more often.</td>
</tr>
<tr>
<td>Socorro</td>
<td>If I were to ballpark a number, I would say around 80% of the time. I think it’s a pretty substantial problem.</td>
</tr>
<tr>
<td>Hermano</td>
<td>I have to say that athletes knowingly hide their symptoms more often than they should.</td>
</tr>
<tr>
<td>Soñador</td>
<td>Almost all of the time they think they might have sustained a concussion, I believe the athlete will hide their symptoms.</td>
</tr>
<tr>
<td>Competidor</td>
<td>I would say definitely a little bit. Now, people are more aware of concussions as an injury and so that has helped. But, when I was younger and in middle school, I think they were hidden a lot. But, I’m not sure if they were purposely hiding them, or they honestly didn’t know that the symptoms they were experiencing were associated with a possible concussion.</td>
</tr>
</tbody>
</table>

Table 4.9. Incidence of concussion symptom-hiding in sport based on personal experience and observation among high school participants.

TEAM CONCEPTUALIZATION OF CONCUSSION

Interview Question: What is the general perception of concussions as a sports injury on your football team?

In describing the perception of concussions on their own teams, the six athletes elucidated three major themes: (1) concussions as an emblem of weakness; (2) lack of concern about the injury and its consequences; and (3) negative stigma of the word “concussion” (Table 4.10). Two subjects (Aprensivo and Soñador) mentioned that concussions are viewed as a sign of personal weakness. Two other participants (Guerrero and Competidor) illustrated a team culture of unconcern and disinterest in concussions as a sports injury. Finally, two athletes (Guerrero
and Socorro) presented concussions as being taboo and accordingly silenced in the team locker room.

<table>
<thead>
<tr>
<th>High School Team Conceptualization of Concussion</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Aprensivo</strong></td>
</tr>
<tr>
<td><strong>Guerrero</strong></td>
</tr>
<tr>
<td><strong>Socorro</strong></td>
</tr>
<tr>
<td><strong>Hermano</strong></td>
</tr>
<tr>
<td><strong>Soñador</strong></td>
</tr>
<tr>
<td><strong>Competitdor</strong></td>
</tr>
</tbody>
</table>

Table 4.10. High school team understanding of and atmosphere surrounding concussion as a sports injury.
LEVEL OF CONCUSSION EDUCATION

Interview Question: Does your team have an education program about concussions that you have to go through before the season starts?

The six high school participants generally provided the same discourse on concussion education during their time playing high school football (Table 4.11). Five of the six student athletes explained that their concussion education consisted of the athletic department sending home an information packet to the parents for perusal or asking the athletes to read through an information packet at a team function. In both scenarios, the common response was passivity and inaction, as the student athletes used phrases like “It’s one of those things that everybody’s going to overlook;” “but it’s not something I would want to read or really care about;” “I can honestly say that I have never looked at those;” “I mean no one is going to take the time to pick one up and read it;” and “I never took the time to read this stuff over and neither did my buddies. We kind of just brushed the info aside to be honest” to describe their interaction with these paper materials. One athlete stated that he was required to watch a concussion video before each season; however, it proved to be uninformative and most of his teammates were disinterested.
<table>
<thead>
<tr>
<th>Extent of Concussion Education</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Aprensivo</strong></td>
</tr>
<tr>
<td>For high school sports, we have to watch a video every year on concussions and sign off that we had watched it; however, the video isn’t really informative and most of my teammates don’t take it seriously. For club soccer, there was no education on concussions. Middle school and elementary school sports had no education as well.</td>
</tr>
<tr>
<td><strong>Guerrero</strong></td>
</tr>
<tr>
<td>They send some materials home that none of us ever look at. It’s one of those things that everybody’s going to overlook. Coaches will talk about it and tell us about the symptoms, but it’s one of those things we never had a big discussion about.</td>
</tr>
<tr>
<td><strong>Socorro</strong></td>
</tr>
<tr>
<td>We do not. At least not anything seriously formal. Our athletic trainers reviewed some of the signs of concussions with us but absolutely nothing formal. The education is pretty minimal I would say. I think they might send home some paper materials to our parents but it’s not something I would want to read or really care about.</td>
</tr>
<tr>
<td><strong>Hermano</strong></td>
</tr>
<tr>
<td>No we do not have any formal education program. I think some papers or pamphlets are sent home, but I can honestly say that I have never looked at those.</td>
</tr>
<tr>
<td><strong>Soñador</strong></td>
</tr>
<tr>
<td>We have learned a little bit about concussions in health class, but our football team has never gone through any formal concussion education program. At our first team meeting each season, there is a table set up with pamphlets you can read, but I mean no one is going to take the time to pick one up and read it.</td>
</tr>
<tr>
<td><strong>Competidtor</strong></td>
</tr>
<tr>
<td>Associated with the IMPACT testing of our reaction times, the trainers would give us a packet with the symptoms of a concussion blah, blah, blah and how to identify if you had sustained one and stuff. But, I never took the time to read this stuff over and neither did my buddies. We kind of just brushed the info aside to be honest. As high schoolers, we have this mindset that we’re invincible and it’s never going to happen to us. Since you don’t think it will ever happen to you, why spend any time worrying about it? That was kind of the general mindset.</td>
</tr>
</tbody>
</table>

Table 4.11. Status of education presentation in high school athletics.
CHAPTER 5: IMPLICATIONS FOR PRACTICE

Study Synopsis

1.6-3.8 million sports-related concussions are diagnosed annually; however, many potential concussions may not be disclosed to clinicians, coaches, and other supervising adults in sport. Student athletes represent the primary source for a concussion evaluation, as they can choose to share their symptoms with an athletic trainer, coach, or physician. From headaches and irritability to dizziness, many concussion symptoms are subjective, requiring self-awareness and an unwavering honesty on the part of the student athlete.

With concussion symptom-hiding continuing to pervade athletics at all levels, the obvious question to pose would be: why is this occurring (McCrea et al., 2004)? Why are student athletes hiding such serious symptoms and putting their lives at risk? This study set out to investigate this query via two major research questions informed by a constructivist grounded theory methodology:

(1) How do pre-college student athletes make meaning of the phenomenon and experience of sports-related concussions during their middle/high school football careers?

(2) What role do pre-college student athletes see their coaches, parents, guardians, physicians, and themselves playing in this process?

In answering these two questions, this study aimed to peek into the psyche of the student athlete in regards to concussion symptom-hiding to inform necessary improvements in concussion education, identification, management, and conceptualization.

Ten student athletes (four middle school and six high school) who had sustained a concussion or believed they had sustained a concussion provided their own stories in the context of a 30-60 minute interview. The interview transcriptions were then analyzed in a case-by case
manner as well as via cross-case analysis using open, selective, and theoretical coding to identify possible emerging themes at play (Glaser & Strauss, 1967, Glaser 1978, Strauss & Corbin, 1998).

The case-by-case process allowed for analysis of varying themes within each participant’s interview independent of the others. Such focus on each individual allowed for ample delineation of meaning-making applied by each student athlete relative to the concussion phenomenon (research question 1). Cross-case analysis, on the other hand, allowed for aggregate analysis of all 10 participant transcripts as well as collective analysis of the middle school (age 13) and high school (age 18) athlete transcripts as separate competition levels.

In assessing the global commonalities between all 10 interviews, the student athletes dictated three major foci: (1) motivation for athletic participation and life lessons learned in sport; (2) psychosocial epistemology of concussion; and (3) self-authored concussion symptomology. In terms of the latter two foci, the intimate discourse illuminated the importance of each athlete’s conception of a concussion. Although the latest ISCC medical and scientific definition of a “concussion” exists as a complex pathophysiological injury to the brain engendered by biomechanical forces (McCrory et al., 2013), the personal definition of a concussion provided by each participant impacts how they relate to the concussion experience. As such, how each individual conceptualizes and makes meaning of concussion in sport readily predicts how he will interpret a possible concussion episode. If the symptom manifestation following a blow to the head or body does not match one’s self-perceived definition of a concussion, then one may fail to report possible concussion symptoms on the basis that it is not encompassing of one’s conceptualization of concussion.
Cross-case analysis based on competition level was centered around four major categories that helped to investigate research question #2: (1) personal rationale for symptom-hiding; (2) incidence of occurrence; (3) team perception of concussion as a sports injury; and (4) level of concussion education received. Research question #2 was most clearly targeted by the thematic delineation of the personal rationales for symptom-hiding. Middle school student athletes presented three major themes and associated subthemes for failing to report concussion symptoms:

(1) external and internal perceptions of walking away from the fight
   a. fear of letting the team down
   b. fear of being perceived as weak or unmasculine
   c. threat of potential bullying and name-calling

(2) possible loss of playing time/starting position

(3) lack of support and encouragement to report from
   a. teammates
   b. coaching staff
   c. medical staff

The high school cohort, on the other hand, identified five major themes for nondisclosure:

(1) external and internal perceptions of walking away from the fight
   a. fear of letting the team down
   b. fear of being perceived as weak or unmasculine

(2) possible loss of playing time/starting position

(3) lack of severity for concussions as sport injury

(4) lack of support and encouragement to report from
Delimitations

One major strength of this study was the novel approach of using qualitative analysis in concussion-focused research. However, several limitations exist within the context of this research paradigm. As only 10 participants completed this study, the level of variability in ethnicity and age was difficult to satisfy. Additionally, although the subjects varied in school categorization (urban, suburban, and rural), the subjects all came from school districts in the Midwest region of the United States, limiting the generalizability of the data collected to schools located elsewhere due to the homogeneity of concussion regulations in this region of the country.

Moreover, as student athletes were asked to recall concussive and possible concussive episodes, there was potential for recall bias. Similarly, there was no means of checking the validity of the information presented by the participants regarding their experience with concussions.

Conclusions and Implications for Practice

MIDDLE SCHOOL LEVEL

Each middle school participant was asked to provide personal suggestions for improvement in concussion recognition and symptom reporting at the middle school level based on observations and personal experiences. Two major themes were exhibited in the subjects’ suggestion for improvements: (1) the need for a medical professional to be present on the sidelines for all games and (2) more supportive atmosphere created by and communicated encouragement from the coaching staff to report concussion symptoms. A third theme was illustrated in Table 4.7, as the students identified a lack in concussion education.
1.) Need for medical professional on the sideline

Three of the four middle school subjects admitted that their schools did not have a medical professional on staff in the athletic department. Without this presence on the sideline, the athlete maintains a higher responsibility to tell someone about their possible concussion symptoms. To that end, these three athletes acknowledged the need to fill this void in the athletic staff for more eyes on the sideline to identify and evaluate possible concussions immediately after a potential concussive blow. The following quotes were used to justify this need:

   a) “I know resources are not always there, but we really need to have medical people on the sidelines to be on the lookout for concussions, because the coaches and fans are so focused on the game that it comes down to us to have to stop playing and tell someone about what happened if we don’t feel right after a bad hit.”

   b) “I think we need medical people on the sideline to look for concussions and give us someone to talk to other than the coaches who are worried about the game and next play.”

   c) “There definitely needs to be more people watching the game for concussions. It would really help if we had an athletic trainer or doctor that we could go to.”

2.) More supportive atmosphere created by and encouragement from coaching staff

Three of the four subjects also addressed the need for coaches to create a more supportive atmosphere within the team culture surrounding concussions and openly encourage concussion symptom reporting. Similarly, coaches should be more transparent and communicative their own views of concussions as a sports injury. The three students suggest:

   a) “I think there needs to be a conversation before the season begins between the coaching staff and the players about concussions. I think the coaches need to make it
known that they view the injury as serious and then encourage their players to come to them if they ever experience what they think might be a concussion.”

b) “It would also be great for the coaches to care a lot more about them and be easier to talk to about injuries.”

c) “I also think we need to feel comfortable talking about concussions. Coaches need to do a better job of making sure concussions are taken seriously and that they care about their players.”

3.) Need for structured education programs

All four students (Table 4.7) emphasized the lack of concussion education in middle school sports. A structured education program should be generated that engages middle school athletes in the learning process via active participation. One student mentioned that he thought his school might send home an information packet, but it is not something he would consider reading. Thus, education developers need to work with middle school students to identify the best presentation method for optimal engagement with and learning of concussion information.
HIGH SCHOOL LEVEL

At the high school level, three major themes emerged as possible routes of improvement based on the interviewee dictations: (1) the need for structured and engaging concussion education to emphasize the potential severity of the injury; (2) more accountability for referees and medical staff/increased medical staff presence; and (3) more supportive atmosphere created by and encouragement from coaching staff.

1.) Need for structured and engaging concussion education to emphasize severity of injury

Only one of the six athletes remembered a formal, structured education program (Table 4.11); Aprensivo mentioned he was required to watch a concussion video and sign off that it had been completed prior to playing each season. The other five participants, on the other hand, discussed the passivity of concussion education at their schools, including the distribution of concussion materials for the athletes to read on their own time. Thus, three of the athletes suggested improvements in concussion education to be more active and better engage the target audience, possibly through a multimedia presentation or demonstration. Specifically, they expressed the need for education to break down the mindset of invincibility and reiterate the severity of the injury. The three participants explain:

a) “Another big thing I would like to see happen is more education or delivery of some kind to express the seriousness of multiple concussions. I know several people who have had six or more concussions and continue to play the game. For them, another concussion is just another tally mark.”

b) “All high schools need a mandatory video all players have to watch before every season, because I think we would actually be interested in watching something like that rather than some pieces of paper.”
c) “I would say a demonstration or media presentation that would keep people more engaged with concussion education would help, because clearly handing athletes papers to read is not working.”

One participant did counter this focus on education improvement, however, saying, “A kid is not going to want to come out and willingly share their symptoms. You can put a video up there a million times. You can preach it. You can say it’s okay to tell someone about your symptoms.”

2.) More accountability for referees and medical staff/Increased medical staff presence

Another major improvement that was suggested by four of the six high school athletes was the need for referees and medical professionals to be more accountable in recognizing possible concussions when they happen as well as for an increased number of medical professionals to be present on the sideline. This was stated to be of great importance in identifying possible concussions when they happen so that the athlete can be removed from the competition and evaluated by the training staff. The four students propose:

a) “For high school football, I think there needs to be at least one athletic trainer or medical professional on the field to be present to clear players before entering the game. The process for evaluating players should not be hindered by the competition on the field, as the medical professional has the best chance at determining if the symptoms are being masked by the player. Additionally, the referee should have the discretion to stop the game after a serious head collision, even if the player does not remain down on the floor.”

b) “More pressure needs to be put on the trainers. A kid is not going to want to come out and willingly share their symptoms. You can put a video up there a million times. You can preach it. You can say it’s okay to tell someone about your symptoms. But, the
trainers need to be watching more closely for it and pull a kid out for testing when they suspect something is wrong. I think people need to get checked out more than they do now. You see in the pro game where doctors are constantly checking out players and saying no to their return to the game.”

c) “Also, I think high school football teams need more doctors and athletic trainers on the sidelines to be on the lookout for concussions. I came from a small school that only had one team doctor for all sports. With more people looking and policing, concussions can be recognized when they happen and prevent any possibility of hiding symptoms by immediately removing the player and putting them through the concussion protocol.”

d) “Also, when trainers see somebody take a blow to the head, even if the player claims he is fine, they need to get him off the field and make sure he is ok. More eyes on the sidelines would be incredible at catching almost everything the second the hit occurs, rather than trusting the honesty and initiative of the athlete to report.”

3.) More supportive atmosphere created by and encouragement from coaching staff.

The final point of emphasis for change in high school football in regard to the concussion phenomenon is the need for the coaching staff to create a more supportive and encouraging atmosphere to report. Three of the six individuals predicted that such a culture shift could enhance player comfort in reporting symptoms and feel more supported by teammates and coaches to disclose concussion symptoms. These three subjects provide:

a) “I think coaches need to be more accountable for pulling out players who they notice might have been concussed, like the player on my team who played three quarters of the game or more concussed. They need to make sure they don’t go back in the game no matter what the student says or how much they beg.”
b) “I wish that more players would tell how they are feeling and tell when they think they need attention. I think this starts with the coaching staff making it known that they want you to report how you’re feeling if anything at all is off.”

c) “I would also say there needs to be a “real talk” discussion initiated by our coaches. If the coaches have that human, emotional attitude that they genuinely care and think concussions are serious, then the players will be more willing to listen and trust telling them about their symptoms. You’re always scared to tell the coach that you think you’re hurt. And if he’s a hard a**, he’ll tell you that you’re not injured, you’re just hurt and need to rub some dirt on it.”

As can be noted in comparing these suggestions with those of the middle school participants, the delineated themes are quite similar with a few minor differences. Specifically, the high school subjects mentioned the need for more accountability on the part of the referees and medical staff to remove student athletes from a game or practice for concussion evaluation. Additionally, they expressed the need for an increased medical staff presence on the sidelines, not because of absence as was presented by the middle school cohort, but to handle the increased volume of players on the football team at the high school level. Finally, the high school cohort stated that they not only desired a structured education program but also mentioned that this program needed to focus on the severity of the injury. Further research should seek a higher volume of participant stories to determine more concretely each competition level’s potential distinct needs that must be attended to independently to improve concussion symptom-reporting.
Implications for Future Research

As this study was the first of its kind to provide the concussion narrative with qualitative analysis consistent with the grounded theory research paradigm, future research endeavors should investigate each competition level (middle school, high school, college, and professional) independently and aim to increase the number of self-authored stories provided by the participants for a greater volume of unique experiences. Similarly, investigators may want to consider a longitudinal study that follows participants over the course of elementary school to high school (and beyond, if possible) and utilize the same meaning-making approach to experimentation. One major caveat would be potential participant drop-off should they decide not to continue playing sports in their journey through academia and beyond; however, much inherent value for future improvements in athletics could be gained from the ability to capture the concussion experience as understood by the student athlete over time. Finally, future studies should also consider comparing male and female-identified student athlete perspectives on concussion in sport, with specific emphasis on concussion symptom-hiding.
CHAPTER 6: REFLEXIVITY

Personal Anecdote: Impetus for Experimentation

I have sustained six sports-related concussions since the winter of my eighth grade year.

In February of my eighth grade year, I went up for a lay-up in a Catholic Youth League basketball game and was slammed into the wall behind the hoop. My head hit hard against the wall, leaving me unconscious and disillusioned. Upon waking, I remember seeing my dad, coach, and the referees huddled around me, none of whom had ever experienced something like this. Without knowing anything about concussions, I ran a couple of times to the end of the court and back and re-entered the game. With symptoms I currently recognize as consistent with a concussion, I went home that night and even went to practice the next day. During practice the following day, I was hit in the head with an elbow while attempting to grab a rebound. Immediately, I fell to my knees, as I had an even more excruciating headache and lost sight in one of my eyes. As something was seriously wrong, my parents and I rushed to the ER. After hours of medical testing, I was diagnosed with a double concussion, two concussions back-to-back in a very short amount of time. I struggled with school for the remainder of the year, as symptoms persisted until summertime.

In the subsequent fall, I began my high school soccer career and had my season ended early by another concussion that resulted from being flipped on a set piece and landing directly on my head and neck. After I was hit, I remained unconscious on the ground while the game continued to be played with me lying at the opposite end of the field. Upon waking, the ref told me to get up and get off-the-field of play. I sat down on the bench with the same symptoms as the basketball incident, but my coach wanted to put me back in the game. My parents and I knew better, as we took off for the ER immediately. Once again, I had sustained a concussion, and resultantly, I missed the second half of the season and a week of school. I suffered minor
concussions in my sophomore year and in the summer before my junior year, but after meeting with a team physician and following the concussion return-to-play protocol recently established by the high school’s athletic trainers, I proceeded back to play with caution. Unfortunately, I sustained a life-threatening concussion at the beginning of my junior year that resulted in missing over seven weeks of school. I will recount the experience below:

In the waning minutes of my final high school soccer game, I challenged my Herculean opponent’s breakaway with a never-give-up attitude born perhaps of my Spanish heritage. Though I protected our goal, David did not beat Goliath. As my feet slid to save the goal, everything went black. Mom told me that within seconds, EMTs arrived, fitted me with a neck brace and strapped me to a gurney. Red lights flashed. Sirens blared. With Mom at my side, the ambulance rushed me to the nearest hospital, and at one point, an EMT shouted to the driver, “We may lose him!” Medical means were failing. Mom began to pray.

I awoke in a brightly lit, antiseptic room, which I mistook for heaven, to hear a nurse exclaim, “He’s stable!” My medical team erupted with cheers as if they had just won the Super Bowl. The lead neurosurgeon diagnosed a severe traumatic brain injury with limited neck damage. “Stable” was the only word I needed to hear to endure the remainder of the siege.

Over the next seven weeks, I returned to both the hospital and neurosurgeon’s office for steroids, in a Medrol dose pack, and pain medicine/anti-inflammatories, like Percocet, Naproxen, and Indomethacin, but nothing seemed to work. After missing the first quarter of school, I finally received two occipital nerve block injections, which provided enough relief to begin my return to normalcy. Unfortunately, an experience like this has consequences. I lost a part of my identity with the loss of soccer—my childhood passion. I lost my perfect vision and must wear contacts
to compensate. I lost the courage to throw my body into the fight. Nevertheless, losses do not tell my entire story.

Along my journey, I had a series of epiphanies about the many things I took for granted, including the ability to read a paragraph without a sharp headache, to remember my phone number or what the teacher just said in class, and to go outside or listen to a conversation without having to lie down because of the light or sound. Today, I appreciate life more, precisely because I almost lost mine, and I want to use this gift of life to serve others domestically and abroad.

Although I initially saw my accident as a tragedy, it proved a blessing because it introduced me to the field of medicine. The first-hand experience acquired as a patient and various clinical internship opportunities, combined with focused academic dedication, have guided my career aspirations toward neurology and global medicine.

Although I will not step on the athletic field again, I have challenged myself to achieve lofty educational and professional goals so that my traumatic experience may eventually guide me to a career where I can help others recover from injuries such as mine.

School District Recruitment

Throughout this experience as a first-time qualitative researcher, I realized the intrinsic difficulty associated with recruiting human subjects. To request possible involvement in the study, I contacted the administration of various school districts and provided them with a study recruitment letter and basic description of the study (Appendix A). Initially, each school district who responded to my contact seemed to be quite interested in participating in the project, as the principal would usually email a sign of approval. However, in addition to this sign of approval, the principal would direct me to the next individual in line to approve the project, the athletic director/coaching staff. Here, once again I would achieve an email confirming the school district’s interest. Then, I would be directed to either the school district’s superintendent or
research director. This is where I had the biggest holdup, as this individual tended to respectfully deny participation due to numerous other research engagements in the district at the time. In navigating this bureaucratic process, I have learned that the ideal time to seek school district approval, especially for student athletes, is in the summer prior to the school year. This allows the researcher to ensure that they have a spot in the district’s research involvements for that upcoming year. Research involvement with many of these schools is considered on a first-come, first-serve basis.
References


Appendix A --- Recruitment Letter

Ohio University Senior Thesis

Title of Research: Brain Bugs: An Infestation of Pressures to Perform Among Pre-College School Athletes.

Primary Researcher: Corey Hayes  Advisor: Dr. Jacob Okumu

Dear Principal XYZ, Coaches, and Athletic Director (name),

I am beginning a senior thesis research project for Ohio University’s Honors Tutorial College entitled: Brain Bugs: An Infestation of Pressures to Perform Among Pre-College School Athletes. I plan to recruit middle school and high school football players for involvement in my study, and I am asking for your assistance in making your student athletes aware of this study as something they can choose to involve themselves in. I can provide you with my contact information as well as a detailed description of the study to be used to inform your athletes about this opportunity.

This study is being done in order investigate the experiences and influential factors related to concussion reporting among middle school and high school football athletes. Participants will be asked to talk about their experiences regarding factors that affect middle school and high school football athletes’ willingness or unwillingness to timely report concussion symptoms, what those experiences mean for them and the role they perceive their school and home environment play in either fostering or inhibiting their personal and professional life goals and aspirations as a student athlete. Participation in the study will consist of completing an online survey followed by a 30-60 minute in-person interview.

A consent process will occur before completion of the online survey and interview. After explanation of the study and the consent form, the selected research participants will be provided with adequate time to thoroughly read the consent form and ask any arising questions. A copy of the consent form will be provided to each participant for their records. I will also remind each participant that their participation is voluntary and that they are free to withdraw from participation at any time.

At the end of the interview, I will ask the participants if quotes from the interview can be used. To track this, a code of 1 or 0 will be recorded with the participant’s code so that I know if the quotes can be used. Personal data of the research participants will be de-identified. After their interview, each participant will be asked to review their quotes for validity. I will present the final draft of the research project to the participants for a final review and input.

Attached is the Ohio University Institutional Review Board (IRB) Research Compliance Authorization.

Thank you,

Corey Hayes
Appendix B --- Adult Consent Form

Ohio University Adult Consent Form

Title of Research: Brain Bugs: An Infestation of Pressures to Perform Among Pre-College Athletes.

Primary Researcher: Corey Hayes   Advisor: Dr. Jacob Okumu

You are being asked permission to participate in research. For you to be able to decide whether you want to participate in this project, you should understand what the project is about, as well as the possible risks and benefits in order to make an informed decision. This process is known as informed consent. This form describes the purpose, procedures, possible benefits, and risks. It also explains how your personal information will be used and protected. Once you have read this form and your questions about the study are answered, you will be asked to sign it. This will allow your participation in this study. You will receive a copy of this document for your records.

Explanation of Study

This study is being done in order investigate the experiences and influential factors related to concussion reporting among middle school and high school football athletes. You are being asked to join this study because you are a middle school or high school football athlete. If you agree to participate, you will be asked to talk about your experiences regarding factors that affect middle school and high school football athletes’ willingness or unwillingness to timely report concussion symptoms, what those experiences mean for you and the role you perceive your school and home environment play in either fostering or inhibiting your personal and professional life goals and aspirations as a student athlete. Your participation in the study will consist of initially completing an online survey. Then, you may choose to continue in the study and complete a 30–60 minute in–person interview to elaborate on the questions asked in the survey. If you choose to complete this interview, you will be expected to either travel to the Ohio University campus in Athens, Ohio for the interview or complete the interview online via a Skype video call. This interview will be conducted at a mutual time that best suits both parties (i.e. in the evening or on weekends). Finally, your parents/guardian can travel to Athens with you; however, they will not be permitted to listen to the interview.

Compensation

You will be compensated for study involvement as follows...

a) All subjects who complete the initial survey on Qualtrics will be compensated with a $10 Visa or Amazon (subject's choice) for their efforts

b) All subjects who choose to complete the interview portion of the study will receive a $15 Visa or Amazon (subject's choice)

c) All subjects who travel to the Athens campus will be reimbursed for travel expenses (i.e. gas money) according to standard gas allowance rates for Ohio University. Subjects will receive a Visa gift card rounded to the nearest whole dollar for this expense.
**Risks and Discomforts**
No risks or discomforts are anticipated.

**Benefits**
This study is important to society and science because it hopes to provide insight needed to help coaches, parents, school staff and sports medicine professionals appropriately engage student athletes at different levels of their athletic careers regarding the dangers of concussions. For that reason, this study aims to investigate the mindset of pre–college student athletes relative to the concussion phenomenon and reporting possible concussion symptoms after sustaining a suspected head injury in practice or during a game. Such an understanding will provide student athletes and those who work with these athletes with the tools necessary to provide an atmosphere that encourages swift reporting of concussion–like symptoms after sustaining a knock to the head or neck. Individually, you may benefit from this study by having an opportunity to reflect upon, clarify, and process how you make sense of your personal and professional life as a middle school student athlete transitioning into high school athletics or high school student athlete transitioning into college football.

**Confidentiality and Records**
Your information will be kept confidential by assigning each participant an identifier code and will be saved on electronic media. Data will be entered into a database using a password that only the principal researcher and the advisor will know. Audio tapes will only be used to transcribe follow–up interviews. Once the interview is transcribed, the audio tapes, memos, field notes, and interview transcripts will be locked in a safe in the office of the thesis advisor at Ohio University (Athens, OH) and will only be accessible to the investigator and the advisor. While quotes may be used, no identifying information will be included in the final research product. The information during this study may be published in scientific journal or presented at scientific meetings but data will be prepared as aggregate data. Once the study is complete, it will be de–identified and kept as aggregate data. All data will be destroyed a year after July 1, 2016.

Additionally, while every effort will be made to keep the study–related information specific to you confidential, there may be circumstances where this information must be shared with:

* Federal agencies, for example the Office of Human Research Protections, whose responsibility is to protect human subjects in research;

* Representatives of Ohio University (OU), including the Institutional Review Board, a committee that oversees the research at OU

**Contact Information**
If you have any questions regarding this study, please contact:

Corey Hayes  (Researcher/Investigator)        Dr. Jacob Okumu (Thesis Advisor)
ch105612@ohio.edu                           okumu@ohio.edu
614.940.5481                                      740.331.0973

If you have any questions regarding your child’s rights as a research participant, please contact Dr. Chris Hayhow, Director of Research Compliance, Ohio University, (740)593–0664 or hayhow@ohio.edu.
By signing below, you are agreeing that:

- You have read this consent form (or it has been read to you) and have been given the opportunity to ask questions and have them answered;
- You have been informed of potential risks to you and they have been explained to your satisfaction;
- You understand Ohio University has no funds set aside for any injuries you might receive as a result of participating in this study;
- You are 18 years of age or older;
- Your participation in this research is completely voluntary;
- You may leave the study at any time; if you decide to stop participating in the study, there will be no penalty to you and you will not lose any benefits to you are otherwise entitled.

Participant Signature________________________________________ Date________________________

Printed Name________________________________________________

Version date: 11/07/2016
Appendix C --- Parental Consent Form

Ohio University Parental Consent Form

Title of Research: Brain Bugs: An Infestation of Pressures to Perform Among Pre-College Athletes

Primary Researcher: Corey Hayes   Advisor: Dr. Jacob Okumu

You are being asked permission for your child to participate in research. For you to be able to decide whether you want your child to participate in this project, you should understand what the project is about, as well as the possible risks and benefits in order to make an informed decision. This process is known as informed consent. This form describes the purpose, procedures, possible benefits, and risks. It also explains how your child’s personal information will be used and protected. Once you have read this form and your questions about the study are answered, you will be asked to sign it. This will allow your child’s participation in this study. You will receive a copy of this document for your records.

Explanation of Study

This study is being done in order to investigate the experiences and influential factors related to concussion reporting among middle school and high school football athletes. Your child is being asked to join this study because your child is a middle school or high school football athlete. If you agree to allow your child to participate, your child will be asked to talk about his experiences regarding factors that affect middle school and high school football athletes’ willingness or unwillingness to timely report concussion symptoms, what those experiences mean for them and the role they perceive their school and home environment play in either fostering or inhibiting their personal and professional life goals and aspirations as a student athlete. Your child’s participation in the study will consist of initially completing an online survey. Then, he may choose to continue in the study and complete a 30-60 minute in-person interview to elaborate on the questions asked in the survey. If he choose to complete this interview, you will be expected to either travel to the Ohio University campus in Athens, Ohio for the interview or complete the interview online via a Skype video call. This interview will be conducted at a mutual time that best suits both parties (i.e. in the evening or on weekends). Finally, if you choose to travel to Athens with your child, you will not be permitted to listen to the interview.

Compensation

Your child will be compensated for study involvement as follows...

a) All subjects who complete the initial survey on Qualtrics will be compensated with a $10 Visa or Amazon (subject’s choice) for their efforts

b) All subjects who choose to complete the interview portion of the study will receive a $15 Visa or Amazon (subject’s choice)

c) All subjects who travel to the Athens campus will be reimbursed for travel expenses (i.e. gas money) according to standard gas allowance rates for Ohio University. Subjects will receive a Visa gift card rounded to the nearest whole dollar for this expense.

Risks and Discomforts

No risks or discomforts are anticipated.
Benefits
This study is important to society and science because it hopes to provide insight needed to help coaches, parents, school staff and sports medicine professionals appropriately engage student athletes at different levels of their athletic careers regarding the dangers of concussions. For that reason, this study aims to investigate the mindset of pre-college student athletes relative to the concussion phenomenon and reporting possible concussion symptoms after sustaining a suspected head injury in practice or during a game. Such an understanding will provide student athletes and those who work with these athletes with the tools necessary to provide an atmosphere that encourages swift reporting of concussion-like symptoms after sustaining a knock to the head or neck. Individually, your child may benefit from this study by having an opportunity to reflect upon, clarify, and process how they make sense of their personal and professional life as a middle school student athlete transitioning into high school athletics or high school student athlete transitioning into college football.

Confidentiality and Records
Your child’s study information will be kept confidential by assigning each student an identifier code and will be saved on electronic media. Data will be entered into a database using a password that only the principal researcher and the advisor will know. Audio tapes will only be used to transcribe follow-up interviews. Once the interview is transcribed, the audio tapes, memos, field notes, and interview transcripts will be locked in a safe in the office of the thesis advisor at Ohio University (Athens, OH) and will only be accessible to the investigator and the advisor. While quotes may be used, no identifying information will be included in the final research product. The information during this study may be published in scientific journal or presented at scientific meetings but data will be prepared as aggregate data. Once the study is complete all data will be de-identified and kept as aggregate data. The data will be destroyed a year from July 1, 2016.

Additionally, while every effort will be made to keep your child’s study-related information confidential, there may be circumstances where this information must be shared with:

* Federal agencies, for example the Office of Human Research Protections, whose responsibility is to protect human subjects in research;

* Representatives of Ohio University (OU), including the Institutional Review Board, a committee that oversees the research at OU

Contact Information
If you have any questions regarding this study, please contact:

Corey Hayes  (Researcher/Investigator)  
ch105612@ohio.edu  
614.940.5481

Dr. Jacob Okumu (Thesis Advisor)  
okumu@ohio.edu  
740.331.0973

If you have any questions regarding your child’s rights as a research participant, please contact

Dr. Chris Hayhow, Director of Research Compliance, Ohio University, (740)593–0664 or hayhow@ohio.edu.
By signing below, you are agreeing that:

- you have read this consent form (or it has been read to you) and have been given the opportunity to ask questions and have them answered;
- you have been informed of potential risks to your child and they have been explained to your satisfaction;
- you understand Ohio University has no funds set aside for any injuries your child might receive as a result of participating in this study;
- you are 18 years of age or older;
- your child’s participation in this research is completely voluntary;
- your child may leave the study at any time; if your child decides to stop participating in the study, there will be no penalty to your child and he/she will not lose any benefits to which he/she is otherwise entitled.

Parent Signature________________________________________ Date________________________

Printed Name__________________________________________

Child’s Name___________________________________________

Version date: 11/07/2016
Appendix D --- Minor Assent Form

Ohio University Minor Assent Form

Title of Research: Brain Bugs: An Infestation of Pressures to Perform Among Pre-College Athletes.

We are doing a study to learn about what factors influence whether or not a student athlete tells someone about their concussion-related symptoms after sustaining a concussive hit during a game or practice.

If you agree to be in our study, we are going to ask you to fill out a survey asking you to answer some questions about your time playing football. We want to know if you have ever received a concussion from playing football and what factors may have played a role in you telling someone about the injury. After completing the survey, you can choose to continue in the study and perform an in-person or online Skype interview telling us more about your time as a football player and your experience with concussions.

You will be compensated for study involvement as follows...

a) All subjects who complete the initial survey will be compensated with a $10 Visa or Amazon (subject’s choice) for their efforts

b) All subjects who choose to complete the interview portion of the study will receive a $15 Visa or Amazon (subject’s choice)

c) All subjects who travel to the Athens campus will be reimbursed for travel expenses (i.e., gas money) according to standard gas allowance rates for Ohio University. Subjects will receive a Visa gift card rounded to the nearest whole dollar for this expense.

You can ask questions about this study at any time. If you decide at any time that you do not want to continue, you are free to ask us to stop and withdraw from the study.

The questions we will ask are only about what you think and have experienced. There are no right or wrong answers, because this is not a test.

If you sign this paper, it means that you have read this and that you want to be in the study. If you don’t want to be in the study, please do not sign this paper. Please know that being in this study is entirely up to you.

Signature_________________________________________ Date__________

Printed Name_____________________________________

Signature of person obtaining consent ________________ Date__________

Printed Name_____________________________________

Version date: 11/07/2016
Appendix E --- IRB Acceptance Letter

Project Number 16-X-161
Project Status APPROVED
Committee: Biomedical IRB
Compliance Contact:
Robin Stack (stack@ohio.edu)
Primary Investigator:
Corey Hayes
Project Title: Brain Bugs: An Infestation of Pressures to Perform Among Pre-College School Athletes
Level of Review: EXPEDITED The Biomedical IRB reviewed and approved by expedited review the above referenced research. The Board was able to provide expedited approval under 45 CFR 46.110(b)(1) because the research meets the applicability criteria and one or more categories of research eligible for expedited review, as indicated below. IRB Approved: 11/09/2016 3:26:59 PM
Expiration: 08/19/2017
Appendix F --- Participant Spanish Names

As my Spanish upbringing is intrinsically tied to my personal identity, I wanted to infuse this cultural background into this research initiative. Impersonal titles such as Subject 1, 2, 3… pervade the research landscape; however, for the readership to better connect with the stories of the 10 participants in this study, each participant and I co-constructed a Spanish name that would illuminate the participant’s perceived view of self. At the end of each interview transcription review with the participant in order to mask his identity, I would ask him to provide a word that encompasses his identity on the football field. Each of these words were then translated as closely as possible into the Spanish language:

<table>
<thead>
<tr>
<th>Subject Name Translation</th>
<th>Translation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aprensivo</td>
<td>Worrier</td>
</tr>
<tr>
<td>Guerrero</td>
<td>Warrior</td>
</tr>
<tr>
<td>Socorro</td>
<td>Helper/Guide</td>
</tr>
<tr>
<td>Disciplinado</td>
<td>Disciplined</td>
</tr>
<tr>
<td>Hermano</td>
<td>Brother</td>
</tr>
<tr>
<td>Soñador</td>
<td>Dreamer</td>
</tr>
<tr>
<td>Competidor</td>
<td>Competitor</td>
</tr>
<tr>
<td>Fuerte</td>
<td>Strong</td>
</tr>
<tr>
<td>Espíritu</td>
<td>Spirit</td>
</tr>
<tr>
<td>Luchador</td>
<td>Fighter</td>
</tr>
</tbody>
</table>
Appendix G --- Glossary of Terms

**Constructivism:** a research paradigm that emphasizes the subjectivity of reality, as each individual constructs the world through a unique lens. In constructivism, the researcher is an intrinsic part of the research process in working with the research participants to co-construct meaning, rather than taking on the role of an objective onlooker. As such, the reader must be aware that the researcher’s values and beliefs will inevitably permeate the research outcomes (Mills, 2006).

**Meaning-Making Paradigm:** the notion that one experiences an event through one’s own unique lens and this perspective ultimately impacts how one will interact with and make meaning of said event (Okumu, 2014).

**Grounded Theory:** a methodological practice whereby researchers aim to construct theory about relevant events that have occurred in one’s life through the delineation of emerging themes (inductive data collection) dictated in the stories told by one related to an experience of interest (Mills, 2006).

**Open Coding:** the first step of qualitative analysis whereby the researcher gleans the data in a case-by-case manner for emerging themes; usually, this is accomplished by memoing the interview transcripts to identify commonalities and consistencies (Glaser, 1978).

**Selective Coding:** a coding process based in grounded theory in which the researcher compares established meaning units and themes for their interrelatedness, generally in a cross-case manner; this is performed until no new meaning units can be established (Okumu, 2014).

**Snowball Sampling:** a sampling technique that recognizes the broad social network of each participant. Thus, participants via snowballing can help to identify and recruit future participants from among their close acquaintances who they believe would best fit the study inclusion criteria by informing these acquaintances about the opportunity to involve themselves in the study (Goodman, 1961).

**Theoretical Coding:** the final coding step the grounded theory coding process where the researcher analyzes the thematic meaning units established by open and selective coding for relationships and conceptual connections to build the theoretical framework dictated by the data (Glaser, 1978).
Appendix H --- Online Survey

COLLEGE OF HEALTH SCIENCES AND PROFESSIONS

PLEASE ANSWER ALL QUESTIONS HONESTLY AND COMPLETELY. IF YOU PREFER TO NOT ANSWER A QUESTION, LEAVE IT BLANK OR TYPE IN N/A. THANKS FOR YOUR RESPONSE.

The following survey will ask you several questions regarding your experience as a football player and your experience with concussion reporting among middle school and high school football athletes. Your responses to the survey will be kept confidential by assigning each participant an identifier code that will only be known by the investigators. Your responses will not be able to be traced back to you by anyone other than the investigators. Data will be entered into a database using a password that only the research investigators will know. By answering the questions below, you are agreeing to complete the survey. You are free to stop the survey and withdraw your responses at any time during the course of the survey. If you prefer to not answer a question, please leave it blank or type in n/a. Thank you for your participation!

How old are you now?

What grade level are you?

Ethnicity:
- Hispanic or Latino
- Black or African-American
- White
- Native American or American Indian
- Other

At what age did you start playing organized football?

Define the word “concussion” as you understand it:
The remainder of the questions on this page apply to all of your PAST CONCUSSIONS and HEAD INJURY EXPERIENCES (not only in football but in all aspects of your life)

NOTE: Duration of symptoms for the following questions can be listed in number of seconds, minutes, hours, days, weeks, months, etc.

Have you ever been told that you had a concussion?

Yes ☐ No ☐

How many concussions did you sustain in the following time intervals of your life? If you did not sustain a concussion in a given time interval or the time interval does not apply to you, please enter “n/a.”

Number before middle school
Number in middle school
Number in high school

Please list the longest amount of time that you had concussion-related symptoms during each given time interval (make sure to indicate whether the number listed is in seconds, minutes, hours, etc.). If you did not sustain a concussion in the given time interval or the time interval does not apply to you, please enter “n/a.”

Concussions before middle school
Concussions in middle school
Concussions in high school

Who usually told you that you had suffered a concussion during a game or practice?

Before middle school
Middle school
High school

Prior to last year, have you ever suffered a serious head injury that was not a concussion (i.e. skull fracture, brain bleed, etc.)?

Yes ☐ No ☐
PLEASE ANSWER ALL QUESTIONS HONESTLY AND COMPLETELY. IF YOU PREFER TO NOT ANSWER A QUESTION, LEAVE IT BLANK OR TYPE IN N/A. THANKS FOR YOUR RESPONSE.

How many times do you believe you suffered a concussion while playing football in the past 12 months?

How many times did you seek medical attention or volunteer your symptoms to a therapist/trainer, doctor, or other medical staff during the game or practice when you believed you suffered a concussion playing football?

How many times did you seek medical attention or volunteer your symptoms to a therapist/trainer, doctor or other medical staff after the game or practice when you believed you suffered a concussion playing football?

For the following questions, please consider the following question:

If you believe you likely suffered a concussion but did NOT seek medical attention or volunteer your concussion symptoms to the medical staff during or after the game or practice, how important would the following reasons be for choosing to NOT seek medical attention. Please note that if the reason provided would NOT affect your decision to report your possible concussion, select choice 1.

NOTE: 1 = NOT IMPORTANT
      5 = MODERATELY IMPORTANT
      10 = VERY IMPORTANT

Reason: Wanted to finish the game or practice and planned to seek medical attention after the game.

Reason: You felt that you would be removed from the game or practice by the medical staff, coach, etc. and you did not wish this to happen.

Reason: Fear of letting the team or teammates down by being removed from the game.
<table>
<thead>
<tr>
<th>Reason</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fear that being diagnosed with a concussion would result in your missing future games/practice.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 2 3 4 5 6 7 8 9 10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reason: Did not feel the concussion was serious/severe and felt you could still continue to play with little danger to yourself.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 2 3 4 5 6 7 8 9 10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reason: You have similar symptoms of a concussion in the past and felt that there was little or no danger as you had no problems with previous concussions or similar symptoms in the past.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 2 3 4 5 6 7 8 9 10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reason: Fear that being diagnosed with a concussion would affect your standing with the current team or future teams.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 2 3 4 5 6 7 8 9 10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reason: Fear that being diagnosed with a concussion would result in negative consequences from the coach or coaching staff.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 2 3 4 5 6 7 8 9 10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reason: Fear of being isolated from the team or teammates by being removed and having to take time off from the team.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 2 3 4 5 6 7 8 9 10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reason: Normally you would have sought medical attention but the concussion occurred during an important game or at an important game or at an important time of the season (playoffs, rivalry game, etc.).</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 2 3 4 5 6 7 8 9 10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reason: Fear that being diagnosed with a concussion would cause concern and worry amongst family and friends.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 2 3 4 5 6 7 8 9 10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Reason: Fear that being diagnosed and labeled with a concussion could affect your financial income now or in the future.

1 2 3 4 5 6 7 8 9 10
○ ○ ○ ○ ○ ○ ○ ○ ○ ○

Reason: Fear that being diagnosed and labeled with a concussion could affect your ability to keep playing sports.

1 2 3 4 5 6 7 8 9 10
○ ○ ○ ○ ○ ○ ○ ○ ○ ○

Reason: The injury did not occur when any medical personnel were present and you did not have time or desire to go to a medical clinic or hospital to be examined.

1 2 3 4 5 6 7 8 9 10
○ ○ ○ ○ ○ ○ ○ ○ ○ ○

Have you ever experienced a teammate knowingly hide and/or lie about their concussion symptoms? If so, how did you react?

How often do you believe athletes knowingly hide their concussion symptoms?

Why do you believe some athletes choose to not report their concussion symptoms?
What was the general perception of concussions as a sports injury on your most recent team?

Please list any other reasons that would affect your decision NOT to volunteer your concussion symptoms to medical staff, coaches, etc. during a game or practice.

How do you think your answers would have been different in regards to the ranking of reasons if you were back in middle school? In elementary school?