A QUALITATIVE STUDY ON THE INTENTIONS OF YOUTH FEMALE SOCCER PLAYERS' RETURN TO PLAY FOLLOWING A CONCUSSION

by

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(Under the Direction of T. Nicole Kirk)

ABSTRACT

Concussions are a common occurrence in athletics, especially adolescent sports. Female athletes are physiologically at higher risk of concussions, have a greater likelihood of not reporting concussions, and encounter internal and external pressures to play through or return from injury prematurely. The purpose of this study was to investigate the intrinsic and extrinsic factors contributing to youth female soccer players' decisions to RTP after sustaining a concussion. Eight former female youth soccer players (age 20-31 years) who had sustained at least one concussion during youth soccer participated in this study, completing a semi-structured interview with questions about attitudes, intentions, social influences, and personal beliefs regarding sport-related concussions. The findings from this study indicate the importance of understanding concussion behaviors specific to the population of youth female soccer players.

INDEX WORDS: Youth soccer, head injury, girls' sport, theory of planned behavior

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DEDICATION

For every teacher, coach, and advisor I've had. I could not have done this without you.

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CHAPTER ONE

INTRODUCTION

Concussions are a common occurrence in sports, especially in contact sports such as football, soccer, ice hockey, and lacrosse. A concussion is "a type of traumatic brain injury caused by a bump, blow, or jolt to the head or by a hit to the body that causes the head and brain to move rapidly back and forth" (Donnell et al., 2018, p. 163). The frequency of concussion is of particular concern in youth athletics, as children are still developing both fine and gross motor skills as well as sport-specific skills during this time. The fragile nature of children's brains at this age creates a heightened risk for concussion, which is worrisome in this early developmental stage (Kroshus & Chrisman, 2019; Zynda et al., 2020). Concussions can lead to long term damage, such as traumatic brain injury (TBI), and there is particular concern over the subjective nature of concussion signs and symptoms that can only be recognized by the player (Donnell et al., 2018). Child athletes may not recognize the inconsistent and unclear signs of a concussion (Kroshus & Chrisman, 2019; Zynda et al., 2020). Additionally, older children may be afraid to report a suspected concussion because they do not want to lose out on playing time or appear weak to their teammates and friends (Caron et al., 2021; Kroshus et al., 2014).

A specific population that faces concussion concerns is female youth soccer players. Data reflect that girl soccer players are five times more likely to continue play with a concussion compared to boys (Zynda et al., 2020). Additionally, female athletes are two times more likely to sustain a concussion than male athletes while playing sports under the same rules (Kroshus et al., 2017). Many factors contribute to this gender discrepancy, including physiological and social

differences between males and females (Berg et al., 2022; Covassin & Elbin, 2011). Physiological differences include head and neck sizes between male and female athletes and reduced neck strength among female athletes compared to their male counterparts (Covassin & Elbin, 2011). There are also many social factors at play that are believed to contribute to higher rates of concussion among the female youth athlete population. For example, the sport environment has been well-established as a masculine domain where qualities such as risk-taking and playing through pain are often valued and expected (Kroshus et al., 2017; Waldron & Krane, 2005). When female athletes feel pressure to conform to these masculine values, they may be less likely to disclose concussion symptoms or underreport symptom severity to return to play quickly (Kroshus et al., 2017; Sheffield & Stutts, 2020; Waldron & Krane, 2005). Concussions are serious injuries and players understand the gravity of the injury, yet many female youth athletes return to play before they should, or simply disregard the symptoms altogether.

Statement of the Problem

While the scholarly literature has documented the nature of concussions and their implications, there has been less attention given to the intrinsic and extrinsic factors that may contribute to an athlete's decision to return to play after sustaining a concussion. Based on current research on sport-related concussions, it is evident that concussion-education alone is not successful in reducing concussion rates in the United States (Carpenter et al., 2020; Chandran et al., 2020; Donnell et al., 2018; Myrdal et al., 2017; Kroshus & Chrisman, 2019). However, the complexity of gender factors and concussion is not well-understood within the population of young female athletes, as the traditionally masculine norms of taking risks, "toughing it out," relying on oneself, and doing whatever it takes to win are central concepts in sports culture (Kroshus et al., 2017) and are connected to concussion attitudes within this population.

Theoretical Framework

The Theory of Planned Behavior (TPB) (Ajzen, 1991) will be the theory guiding the conduct of this study. TPB was developed by Ajzen and is influenced by the theory of reasoned action and shares similar characteristics with Bandura's theory of self-efficacy (Bandura, 1997). TPB has been used to understand concussion reporting behaviors because the theory posits that "the most important predictor of a behavior is the intention to perform that behavior" (Kroshus et al., 2014, p. 270). Reporting behaviors are influenced by the three major aspects of TPB, which are attitudes, subjective norms, and perceived behavioral control. The traditional version of TPB investigates specific factors such as peer pressure and self-perception that may inform an athlete's decision-making process. However, the traditional framework created by Ajzen does not consider how factors such as group norms, self-identity, or social support could also significantly influence an athlete's decision-making (Hamilton & White, 2008). Thus, newer adaptations or extensions of the traditional TPB framework have included these additional factors (Hamilton & White, 2008), which will be considered in this study.

TPB has been used in previous studies investigating concussion reporting behaviors in specific populations (Kroshus et al., 2014; Chrisman et al., 2014) and has been a useful theoretical tool for this topic. However, research using the extended Theory of Planned Behavior to study this phenomenon is very limited. While this newer model has been used to evaluate behavior in general physical activity contexts (Hamilton & White, 2008), it has not been used in the specific context of concussion reporting behaviors. This extended version of TPB considers more nuanced behavioral aspects that may influence reporting intentions in the specific population of youth female soccer players, as it addresses self-identity, social support, and group norms.

Purpose of the Study

The purpose of this study is to investigate the intrinsic and extrinsic factors contributing to youth female soccer players' decisions to return to play after sustaining a concussion. To fulfill this purpose, I will use a semi-structured interview approach with questions about attitudes, intentions, social influences, and personal beliefs regarding sport-related concussions. By taking a qualitative approach to the issue of recurrent concussions and speedy return to play by youth female soccer players, this study aims to develop a greater understanding of the subjective perspectives of this population. Investigating the masculine norms that are pervasive throughout sports culture addresses not only the conditions under which these youth female athletes are developing, but also how this culture impacts their decision-making in concussion reporting, treatment, and return to play timeline.

Research Questions

Guiding research questions for this study are as follows:

1. What are the lived experiences of female former youth soccer players who have sustained one or more concussions during play?
2. How do former female soccer players' attitudes, subjective normative beliefs, perceived behavioral control, and intentions about concussion shape their return to play (RTP) decisions?
3. What is the role of other belief factors (e.g., self-identity, perceptions of group norms) on female former youth soccer players' RTP decisions?

Significance of the Study

Despite increased concussion education and development of protocols, many youth athletes continue to underreport concussion symptoms and return to play too soon (Donnell, et

al., 2018). Given that female youth soccer players are at a higher risk for concussion due to both physical and social factors (Kroshus et al., 2017; Waldron & Krane, 2005), it is imperative to develop a greater understanding of this phenomenon from the athletes' perspectives. This study will provide a qualitative analysis of the intrinsic and extrinsic factors that contribute to return to play decision making after sustaining a concussion, which contributes to the existing literature on the topic of concussion attitudes. In addition, this study considers how return to play guidelines are inconsistent and focused exclusively on the physical components of injury and recovery, while it is evident that psychosocial elements are also involved in the return to play process (van Ierssel et al., 2022).

Finally, to the author's knowledge, no studies have examined the lived experiences and return to play decision making factors within the specific population of female youth soccer players. Research has been conducted on reporting behaviors and intentions of athletes that include female soccer players (Chandran et al., 2020; Chrisman et al., 2013; Kroshus et al., 2015; Kroshus et al., 2017; Myrdal et al., 2017), but these studies did not focus specifically on youth female soccer players. It is important to study the specific population, as it is reasonable to assume that different populations will have varying motivations, influences, and behaviors toward concussion and the return to play decision making process.

Limitations

1. Since this is a retrospective study, the experiences shared by participants may not fully represent current experiences in youth girls' soccer. Additionally, the nature of retrospective interviews means time has passed between the event(s) and present day. Thus, some details may not be recalled in full.

2. Interviews will be conducted over Zoom, which means some body language may be lost through the screen and cannot be recorded.

Delimitations

1. Participants for this study will be limited to females who played youth soccer. Therefore, findings from this study cannot be generalized to other sports, genders, or adult athletes.
2. This study specifically focuses on concussions sustained in youth soccer. Thus, the findings are not generalizable to other injuries or concussions sustained outside of youth soccer.

Definition of Terms

Concussion: "a type of traumatic brain injury caused by a bump, blow, or jolt to the head or by a hit to the body that causes the head and brain to move rapidly back and forth. This sudden movement can cause the brain to bounce around or twist in the skull, creating chemical changes in the brain and sometimes stretching and damaging the brain cells" (Donnell et al., 2018, p. 163).

Return to Play (RTP): a broad concept in the field of sports medicine, RTP is a spectrum ranging from "full return without restrictions" to "allowed to practice" with no contact. For this study, return to play can be understood as "medical clearance of an athlete for full participation in sport without restriction (strength and conditioning, practice, and competition)" (Creighton et al., 2010, p. 380).

Sport Ethic: a web of concepts that, when taken as a whole, describe traditional norms of athleticism (Malcom, 2006). This includes the notion that athletes are expected to put the game first by making sacrifices in other areas of their lives, such as physical wellness (Malcom, 2006).

The body is seen as a machine which knows no limits and should be pushed to meet the competitive demands of sport (Waldron & Krane, 2005).

The Theory of Planned Behavior: an individual's intention to perform a behavior is one of the most reliable predictors of a future behavior (Ajzen, 1991). This theory is comprised of three main concepts that inform intention: attitudes, subjective norms, and perceived behavioral control. **Attitudes** are understood as an individual's beliefs about consequences (positive or negative) of performing a behavior. **Subjective norms** are defined as an individual's prediction of if important people in their lives will approve or disapprove of a given behavior. Conventionally, this notion is described as peer pressure. **Perceived behavioral control** is how much an individual believes they can perform a specific behavior, and this belief is shaped by factors that could help or hinder performance of the behavior (Ajzen, 2020). In the extended form of TPB used in this study, I also consider three additional factors: group norms, self-identity, and social support. **Group norms** are the implicit and explicit expectations of behavior in the context of a group in a specific context, such as a team (Hamilton and White, 2008). **Self-identity** refers to the salient part of an individual's sense of self that informs behavior (Hamilton and White, 2008). Finally, **social support** "refers to the comfort, assistance, and information one receives through formal and informal social interactions" (Hamilton and White, 2008). This is the opposite of subjective norms, as the concept highlights assistance and support from important people, rather than pressure to perform a specific behavior.

CHAPTER TWO

REVIEW OF LITERATURE

The purpose of this chapter is to introduce the history of concussion in youth sport and how our understanding of concussion attitudes has changed. This chapter is organized into the following four sections: (a) scientific overview of concussion, (b) the history of concussion education in youth sports, (c) the current body of literature in the context of concussion in girls' youth sport, and (d) the theoretical framework used to guide the current inquiry.

Concussion

While there are various definitions of the term "concussion" in prominent research, for this study we will use the Center for Disease Control and Prevention's (CDC) definition of concussion: "a type of traumatic brain injury caused by a bump, blow, or jolt to the head or by a hit to the body that causes the head and brain to move rapidly back and forth. This sudden movement can cause the brain to bounce around or twist in the skull, creating chemical changes in the brain and sometimes stretching and damaging the brain cells" (Donnell et al., 2018, p. 163). Concussions are divided into two diagnostic criteria based on recovery time: simple, from which recovery takes 7-10 days, and complex, from which recovery takes ten days or more (Jamault & Duff, 2013). Per the working definition of concussion for this literature review, a player should be screened for concussion any time there is head contact with another object or surface, such as the ground, goalpost, another body, or the soccer ball.

Concussions can become especially dangerous if another concussion is sustained before the prior concussion has fully healed, a phenomenon known as second impact syndrome (SIS)

that can cause intra cerebral hemorrhage, cerebral edema, or in some cases death (Chrisman et al., 2014). While rare, a player can suffer permanent brain damage or death from SIS (Myrdal et al., 2017). The severity of concussions can range from a mild headache to long-term traumatic brain injury, which is one reason why concussions prove to be so difficult to diagnose, report, and treat. Symptoms of sport related concussion are inconsistent and often not easily observable in the way a musculoskeletal injury may be (Kroshus et al., 2015). Often there is no physical indication that an onlooker can notice beyond head impact, so it is up to the player to share their subjective symptoms. Reports of headache and dizziness are also symptoms of other medical issues such as dehydration, making it particularly difficult to confidently identify the presence of a concussion in many instances (Kroshus & Chrisman, 2019; Zynda et al., 2020).

Recent estimates from the CDC indicate that 1.1 to 1.9 million sport and recreation-related concussions are reported among youth under the age of 18 in the United States every year. Of that number, it is estimated that 50% of concussions go unreported and undiagnosed (Chandran et al., 2020; Kroshus & Chrisman, 2019). Beyond physical implications, concussions can cause "somatic, cognitive, and emotional symptoms [which] can interfere substantially with an athlete's activities of daily living and can pose a significant health burden" (Kroshus et al., 2015). Despite these concerns, legislation and mandates requiring concussion education for coaches and parents does not historically increase concussion evaluation and clearance from medical professionals (O'Kane et al., 2014). These laws do not clarify how the education should be delivered, which "allows for the significant interpretation of 'concussion education,' particularly with regard to modality (e.g., written, video, slide presentation, online, in person) but also with regard to the frequency and enforcement of administration" (Chrisman et al., 2014).

Development of Concussion Education in Youth Sport

Concussion education and return to play (RTP) protocols have improved in the last fifteen years with the implementation of the Lystedt Law and development of the ImPACT test (Alsalaheen et al., 2016; Bompadre et al., 2014; Rivara et al., 2014). The first law regarding concussion safety, the Lystedt Law, was implemented in July 2009 and has three major components: first, education for athletes, coaches, and parents on concussion symptoms is required; second, the player must be removed from activity at the time of suspected head injury; and third, the athlete may only return to play after receiving written permission from a concussion-trained healthcare provider after a minimum of 24 hours (Zynda et al., 2020). The Lystedt Law was the first government legislature to offer legal guidelines for how to acknowledge, identify, and treat concussions in youth sports. Implementation of the Lystedt Law highlighted the prevalence of concussions in youth sports. For example, in a cross-sectional study on student athletes conducted in Seattle public high schools only a few years after the Lystedt Law was implemented, researchers found that reported concussion rates more than doubled after the law was mandated (Bompadre et al., 2014). Researchers concluded that concussions were underreported prior to the enactment of the Lystedt Law and thus, concussion rates were much higher than previously thought (Bompadre et al., 2014).

One major component of the Lystedt Law is coach education about concussion and concussion symptoms. Coaches are required to complete a concussion education program that teaches them how to identify signs and symptoms of a concussion and how to proceed if they believe a player sustained a concussion (Chrisman et al., 2014). However, a study examining the effect of required coach education on concussion reporting, indicated that these new requirements did not significantly change in the rate of removal of concussed athletes from play (Rivara et al., 2014). Instead, Rivara and colleagues (2014) found that most athletes continued to

play despite experiencing concussion symptoms, and 40% of these athletes reported that their coach was unaware that they were symptomatic. Further, results of this study indicate that coaches' awareness of concussed athletes did not vary depending on the format that the required education was delivered (Rivara et al., 2014). Despite concussion laws and required education, the format in which this education is delivered varies widely among programs (Chrisman et al., 2014). While the law improved concussion awareness, it did not implement clear requirements or expectations for concussion identification or reporting from the coaches to the players or parents (O'Kane et al., 2014).

In addition to the Lystedt Law, the other major development for concussion protocols is the Immediate Post-concussion Assessment and Cognitive Testing (ImPACT) test, which was first implemented in the early 2000s and has become the most widely used tool for concussion assessment (Alsalaheen et al., 2016). The ImPACT test works by testing four composite scores, including verbal memory, visual memory, visual motor processing speed, and reaction time (Alsalaheen et al., 2016). This test is given to each athlete before the season begins, which is considered the "baseline" test. If an athlete sustains a concussion during practice or gameplay, they take the test again and the results from this test are compared to their baseline test.

Return to Play (RTP)

When an athlete sustains a concussion, there is a post-concussive period focused on healing and rehabilitation. Once this period of recovery is complete, a medical professional should complete an assessment of "physical readiness" to determine if the athlete is ready to safely return to play (RTP; van Ierssel et al., 2022). There is heavy emphasis on treating based on symptom reporting to determine physical readiness such as "resolution of post-concussion symptoms and clinically normal measures of balance and cognitive function" (van Ierssel et al.,

2022, p. 1). Literature demonstrates that concussion symptoms significantly rely on self-reporting, and many athletes will downplay their concussion symptoms to return to play quickly (Chrisman et al., 2013). One of the few scholarly works that has addressed RTP processes, May and colleagues' (2014) graduated RTP protocol, is centered on identifying and responding to individual concussion symptoms but does not provide clear expectations for the athlete regarding RTP-related decisions (May et al., 2014). If athletes strongly identify with their team and love their sport, research shows they will be highly motivated to return to play as quickly as possible, even before their injuries have fully healed (Chrisman, 2013). Without clear RTP guidelines and a gradual, step-by-step protocol, this can open the door for an athlete to rush the recovery process. While knowledge of concussion symptoms can improve diagnostic practices and increase the likelihood that coaches will remove the impacted player from gameplay, this does not help the player understand what to do after reporting concussion symptoms (Carpenter et al., 2020; Chandran et al., 2020; Donnell et al., 2018). There continues to be confusion among players, parents, and coaches surrounding proper concussion management and RTP guidelines, as they continue to be developed (May et al., 2014).

In response to the lack of a standardized model centered on athletes' decision-making in the medical process of RTP following injury, Creighton and colleagues (2010) created a tri-fold decision-based model to determine a clear process intended to reduce controversy and confusion to encourage athletes to adhere to their RTP protocol. Thus, the authors developed the decision based RTP model, which uses the rational decision model as the basis of understanding intentions of athletes and medical professionals. The rational decision model is when "individuals weigh the advantages and disadvantages of decision 'A' (e.g., allowing an athlete to compete [or deciding to compete as the athlete]) against the advantages and disadvantages of

decision 'B' (e.g., restricting an athlete from participation [or deciding to not play as the athlete])" (Creighton et al., 2010 p. 380). In this rational decision model, factors such as participation risk are considered. In this decision based RTP model, three steps are completed by the treating physician in determining an athletes' RTP after injury, including concussion. First, an evaluation of the health status of the athlete is considered, including factors such as demographics, symptoms, symptom severity, medical history, and potential seriousness of the injury. Next, there is a subjective evaluation of participation risk, which considers components such as type of sport, position played, competitive level, and ability to protect the injury. Finally, there is a decision modification process, in which factors such as timing and season, pressure from athlete, external pressure, and injury masking are considered (Creighton et al., 2010). This specific, step-by-step process for determining an individual athlete's RTP guidelines helps create transparency between the clinician and athlete, which should include education on how to treat a concussion and the importance of completing the concussion protocol in full, despite any pressure from the team, coach, or self to return sooner.

Context: Concussion in Girls' Youth Sports

Because they may not recognize the inconsistent and unclear signs of injury, youth athletes may be at a particular risk of premature RTP (Kroshus & Chrisman, 2019; Zynda et al., 2020). Additionally, older children may be afraid to report a suspected concussion because they do not want to lose out on playing time or appear weak to their teammates and friends (Kroshus et al., 2015). This concern over external perception is especially present in adolescent female sports, as their decisions are often made to conform to the traditionally masculine constructs of sport culture (Kroshus et al., 2017). Both male and female athletes are aware of gender constructs in sports and associate negative social consequences with not conforming to the

"correct" gender expectations (Schmalz & Kerstetter, 2006). In sports culture, social norms are usually embedded with the assumptions that men and boys are expected to demonstrate masculine traits while women and girls are supposed to demonstrate feminine traits (Schmalz & Kerstetter, 2006). Sports that demonstrate masculine characteristics are often described as dangerous, challenging, endurance-based, violent, and fast-paced, while sports that are perceived as feminine are focused more on the aesthetic and graceful features found in dance and synchronized swimming (Klomsten et al., 2005).

When women play sports that are seen as masculine, they often feel a need to prove themselves as capable of competing in the masculine domain while still maintaining feminine, aesthetic characteristics (Krane, 2001). Masculine gender norms that are engrained in sports culture such as "toughing it out" and "shaking it off" inadvertently teach female athletes to hide injuries as an attempt to avoid appearing weak (Malcom, 2006). Professional athletes who demonstrate the "strength" to play through pain are idolized and considered heroes—they are used as examples for how to act and used as representations of the "sport ethic" that is considered an essential component to making a good player great (Malcom, 2006). Young athletes are taught this sports ethic and it becomes second nature over time—young female athletes are especially indoctrinated with this sports ethic as they must prove themselves in the male-dominated domain of sport and the conflict between traditional feminine norms and the norm of the sports ethic (Malcolm, 2006). Perhaps unsurprisingly, research indicates that girl soccer players are five times more likely to continue play with a concussion compared to boys (Zynda et al., 2020).

Concussion in girls' sports is especially concerning, as the data suggest that female athletes are more likely to sustain a concussion and experience symptoms for a longer period

than their male counterparts (Covassin & Elbin, 2011). In their 2011 synthesis article, Covassin and Elbin identified several anatomical and physiological reasons for these gender-based differences in recovery. One reason for this is women have a smaller head-neck segment mass when compared to men, which is theorized to cause more angular acceleration after impact. Another reason for higher concussion susceptibility in women is that female athletes usually have less neck strength and neck girth compared to male athletes, which again causes more acceleration of the head. When these physiological components are paired with the sports ethic that reflects masculine ideals, young female athletes are at a high risk for sustaining concussions (Berg et al., 2022). Despite increased risk and severity of concussions sustained by female youth athletes, frequency of concussion reporting to coaches is similar across genders (Sheffield & Stutts, 2020). This comes from the sport ethic mentality that one is expected to play through pain, so it is frowned upon to report pain to coaches and continue to perform (Waldron & Krane, 2005).

Another component of the sport ethic that puts athletes at risk for injury is the notion that the body is a machine. Athletes are physical and use their bodies to perform and execute various sport-related tasks (Waldron & Krane, 2005). When bodies are perceived as machines, there is a heightened likelihood that athletes will push themselves beyond a safe performance capacity, thus putting themselves at risk of injury (Waldron & Krane, 2005). If they do find themselves injured due to this mentality, the same sport ethic that contributed to their injury informs them to hide this injury or play through it, which creates a toxic cycle (Sheffield & Stutts, 2020; Waldron & Krane, 2005). Thus, young female athletes face both physiologically higher risk of concussions, greater likelihood of not reporting concussions, and internal and external pressures

to play through or return from injury prematurely because of a sport ethic that is shaped by traditional masculine sport stereotypes.

Theory of Planned Behavior

The Theory of Planned Behavior (TPB) has been widely used to predict and, in some cases, explain behavior in a variety of domains, including physical activity and health (Ajzen, 2020). TPB was developed by Ajzen after his extensive research on the theory of reasoned action (Fishbein & Ajzen, 1975) and has similarities to Bandura's theory of self-efficacy (Bandura, 1977). What makes TPB unique is the consideration of how perceived control and intention work together as a predictor of behavior (Ajzen, 2020). In TPB, "*actual control* over a behavior is said to moderate the effect of intention on behavior such that intentions are likely to be followed by performance of the behavior to the extent that actual control is high" (Ajzen, 2020, p. 316). Perceived behavioral control is how people perceive their ability to perform a behavior and how this "behavioral performance could moderate the effects of attitude and subjective norms on intentions" (Ajzen, 2020, p. 316). Intention is defined as "how hard people are willing to try, or how much of an effort they are planning to exert, in order to perform the behavior" (Ajzen, 1991, p. 181). When these two forms of control are paired with one's intention to perform a task, this proves to be a reliable predictor of behavior.

The TPB model (figure 2.1) states that the most useful indicator of behavior is the person's intention to perform a specific behavior. In turn, the model holds that three belief-centered factors (i.e., attitudes, subjective norms, and perceived behavioral control [PBC]) directly influence intention (Ajzen, 1991; Carpenter et al., 2020; Kroshus et al., 2015). First, attitude toward performing a behavior is assumed to be influenced by personal beliefs about likely consequences if the behavior is performed—this is defined as "behavioral beliefs" (Ajzen,

2020). In the context of this study, attitude refers to the athlete's perception of the consequences of reporting concussion symptoms. Second, subjective norms reflect perceived pressure from the opinions of people who matter and are important to the individual. There are two categories of subjective normative beliefs: injunctive and descriptive. Injunctive norms are a person's expectations that another individual, group, or team will approve or disapprove of a performed behavior. Descriptive norms are beliefs that important people in the person's life perform the behavior in question (Ajzen, 2020). Both injunctive and descriptive normative beliefs "contribute to the overall perceived social pressure to engage in the behavior or subjective norm" (Ajzen, 2020, p. 315). When a player considers reporting concussion symptoms, their expectations of whether important people to the athlete, such as coaches, parents, or other teammates, will approve or disapprove of their decision shapes their intention to follow RTP protocols. Finally, perceived behavioral control (PBC) considers the athlete's belief that they can perform the behavior or task in question (Kroshus, et al., 2015). These beliefs are shaped by factors that could "facilitate or impede performance of the behavior" (Ajzen, 2020, p. 315). Factors that an athlete may consider when deciding to report concussive symptoms could include cooperation from the coaches or their family's financial ability to seek treatment.

Theory of Planned Behavior and Return to Play

In the body of scholarly literature, TPB has been used as theoretical framework to examine concussion-reporting behavior and return to play decision-making, as expectancy value measures such as perceived subjective norms and attitudes are associated with intention to perform a task (Kroshus et al., 2015). Essentially, an athlete may identify concussion as a serious injury, but unless their intention to report a concussion is strong, they are less likely to report a concussion during gameplay (Register-Mihalik et al., 2013). In a study conducted among United

States' junior ice hockey league teams, Kroshus et al. (2014) investigated the predictive relationship of players' knowledge of concussion symptoms, TPB variables, and concussion reporting behaviors. Researchers found that TPB constructs including positive attitudes regarding concussion reporting, subjective norms, and PBC (operationalized as self-efficacy to report concussion symptoms) were all significantly associated with intention to report their concussion symptoms, regardless of participants' knowledge of concussion symptoms. In turn, intention to report concussion symptoms was significantly associated with behavior (i.e., actual reporting of concussion symptoms). Based on these findings, the researchers concluded that TPB was a useful framework for understanding RTP decisions among adolescent athletes (Kroshus et al., 2014).

In a qualitative study conducted with high school varsity athletes (40% female) in Washington state, Chrisman and colleagues (2013) used a modified TPB framework to explore concussion reporting. Here, researchers presented concussion-related scenarios and asked participants if they would still play, whether they would report their symptoms, and the reasoning behind these decisions. Participants were also asked questions about their concussion-related knowledge. Study findings indicated that while youth athletes generally understood that concussions were serious, their decisions to report a concussion were influenced by subjective norms, particularly their perceptions of how coaches and teammates would react to decisions to report symptoms or remove themselves from practice or gameplay. The authors concluded that TPB, particularly subjective norms, likely play an outsized role in intention to report concussion. Essentially, "athletes' intentions to report concussive symptoms followed the norms for what was acceptable regarding concussive symptom reporting, even when these norms went against

their own concussion knowledge. These norms, in turn, were based on athletes' perceptions of coach expectations regarding concussive symptom reporting" (Chrisman et al., 2013, p. 334). This traditional three-component framework of TPB focuses on specific aspects that are essential for investigating extrinsic factors such as peer pressure and intrinsic factors related to self-perception, making TPB a helpful guide for addressing the multi-faceted issue of early return to play. Essentially, "what individuals intend to do, as mentally constructed while sitting quietly in a classroom or at home, may look very different from what they actually do in the middle of an important game" (Kroshus & Chrisman 2019, p. 917). For example, a young athlete may be informed of the consequences of concussion and intend to cease play, report the injury, and follow RTP protocols if that ever happens to them. In a hypothetical concussion scenario, the athlete may find it easy to focus their attitude, PBC, subjective normative beliefs, and intention toward their health. However, these intentions may be discarded in a real-life concussion situation due to gameplay or individual athletic success. Thus, while education and legislation are essential to informing athletes of the signs, symptoms, and consequences of concussion, it is evident that these measures alone do not guarantee or even promote better concussion-reporting behaviors (Chandran et al., 2020; Myrdal et al., 2017).

Ajzen notes that TPB was born from other theories, so extensions and additional factors can be reasonably considered in the TPB model when done effectively (Ajzen, 2020). Kroshus and colleagues highlight the importance of environment and how it interacts with reporting intentions (Kroshus et al., 2015). For example, "the athlete's environment can thus be conceptualized as influencing their reporting behavior directly or by informing their cognitions about the expected outcomes of reporting and the extent to which important referent groups value these behaviors" (Kroshus et al., 2015, p. 67). This is an extension of TPB (figure 2.2) that

considers how group norms are learned from the environment and thus influence their decision making and reporting intentions.

The influence of group norms, self-identity, and social support on concussion behaviors is supported by research conducted by Hamilton and White (2008), in which they propose an extension of TPB to include the role of the self and social influences when predicting physical activity in adolescents. The results of their study indicated that self-identity played a significant role in anticipating behavior. The more grounded a person is in their identity related to an activity—in this case, being physically active—the more likely they are to complete physical exercise to maintain this identity. Hamilton and White use social identity (Hogg & Abrams, 1988) and self-categorization (Turner et al., 1987) theories to explain the intention-behavior relationship. According to these theories, "when social identity is salient, the individual constructs context-specific group norms based on shared intragroup information and assimilate themselves to these group norms" (Hamilton & White, 2008, p. 58). This supports the notion that group norms are a strong predictor of behavior, as a team member is likely to do what they perceive as the expectation of the group from observing group members.

While Hamilton and White's (2008) study focuses on adolescent physical activity rather than injury sustained during sport, their proposed expansion of TPB to include influences of self-identity, social support, and group norms have implications for understanding adolescents' decisions regarding RTP following injuries such as concussions. While subjective norms as proposed by Ajzen (1991) in his traditional TPB framework are understood as perceived social pressure from important individuals to perform or not perform a certain behavior, group norms are the implicit or explicit expectations of a member's appropriate attitudes or actions as a member of a specific group in a specific context (White et al., 2002). For example, the group

norm factor suggests that if a youth soccer player sustains a concussion during a match and the coach and teammates respond to the injury with "shake it off," they are more likely to assimilate to the group and the perceived expectation that they are to continue playing, regardless of their injury. To this end, it is shown that "the normative influence from an in-group member with whom one identifies [e.g., a teammate], is most influential" (Hamilton & White, 2008, p. 58). Thus, social identity as a soccer player and normative intragroup influences are theorized to play a role in the planned behavior of an athlete after receiving a concussion.

The social aspect of sports and the team's established group norms will likely inform an athlete's self-identity and therefore their decision-making practices about concussion. While Hamilton and White (2008) did not research RTP in youth sports, their extended research on TPB is useful in the context of understanding RTP predictors and behaviors in youth athletes, namely the impact of identity and group/team norms. Additionally, social support is comfort and help that an individual experiences from members in their group, such as teammates, parents, and coaches (Hamilton & White, 2008). Research has shown that social support has a stronger influence on an individual's behavior than subjective norms (Hamilton & White, 2008). Thus, an extended version of TPB, including social support, group norms, and self-identity, can address the nuanced factors contributing to reporting intentions for the specific population of female youth athletes, as research has demonstrated that female athletes find social support to be more influential than their male counterparts (Hamilton & White, 2008).

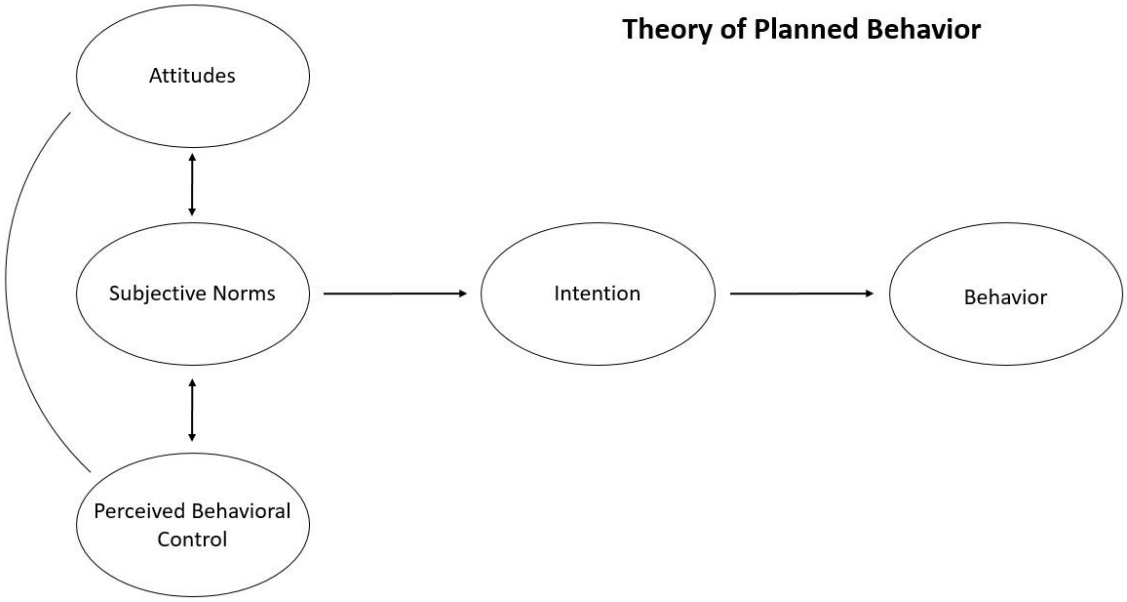
Summary

Existing literature on concussion rates in youth athletics show concussion education alone does not prevent athletes from returning to play too quickly after sustaining a concussion. There are many factors contributing to this, specifically a lack of consistent RTP guidelines and

the masculine stereotypes of "toughing it out" that continue to be lauded in sports culture. There are many gaps in the research, specifically the intrinsic and extrinsic factors that motivate female athletes to return to play after a concussion before they are completely healed. TPB with the additional factors of group norms, social support and self-identity addresses these factors and offers a specific theoretical lens to investigate why youth female soccer players will return to play before completing the concussion protocol in full.

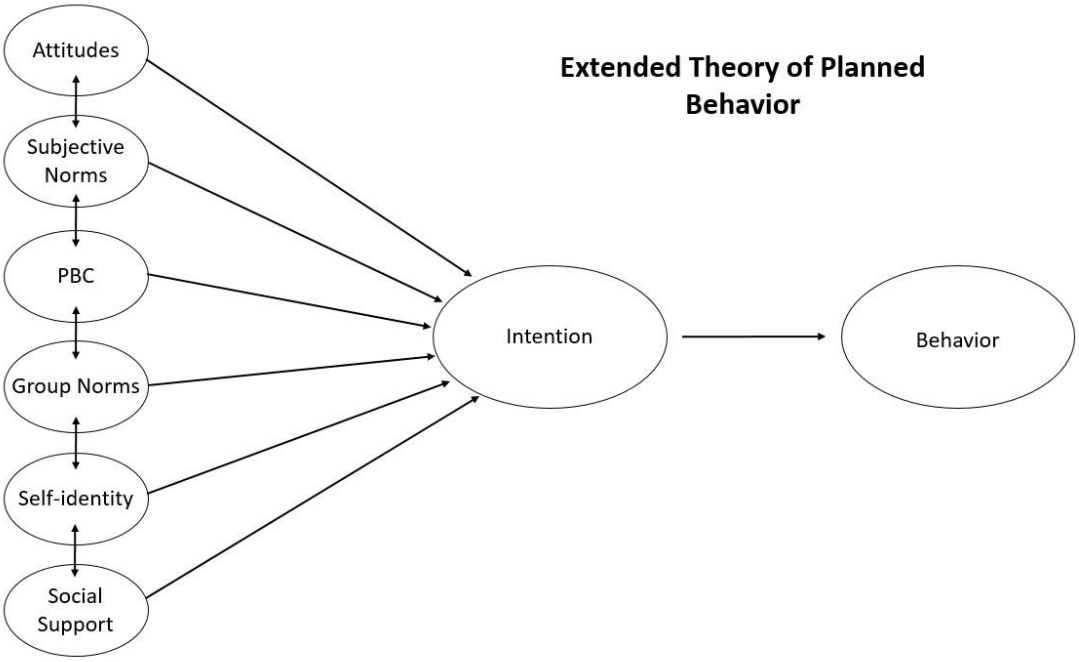
Further, the literature addressed within this review highlights some key challenges that exist surrounding concussion attitudes and decision-making about returning to play within the broad sports context. These challenges are more complex in youth girls sports due to physiological factors and masculine concepts of "sport ethic" that influence the culture of sports from a young age. Despite these findings, many studies have not yet focused on how these challenges play out in youth girls' soccer. The current literature has addressed what contributes to overly quick return to play after concussion, but has yet to elucidate *why* this occurs, especially in the specific population of youth female soccer players. Thus, the purpose of this study is to investigate the intrinsic and extrinsic factors contributing to youth female soccer players' decisions to return to play after sustaining a concussion.

Figure 2.1
Theory of Planned Behavior



Note: Adapted from Ajzen (1991).

Figure 2.2
Extended Theory of Planned Behavior



Note: Adapted from Ajzen (1991) and Hamilton & White (2008).

CHAPTER THREE

METHODS

The purpose of this chapter is to describe the methodology used for the following qualitative study. First, this chapter will identify the research design and participant inclusion and exclusion criteria. Second, the data collection process will be described. The data analysis section describes the theoretical and qualitative analysis used and how qualitative quality will be maintained throughout the study. Finally, approaches used to support study data quality are described at the close of the chapter.

Research Design

This study adopted an interpretive descriptive approach to investigate the lived experiences of former female youth soccer players aged 18 or older who have sustained at least one sport-related concussion to understand the intrinsic and extrinsic factors that influenced their decisions to return to play. Interpretive descriptive designs will "search out and explore features or elements of a common issue but will seek to render an understanding of them that honors their inherent complexity" (Thorne, 2016). Interpretive description is a branch of qualitative description, borrowing many of the core components of the design, but goes deeper than description. Unlike qualitative description, interpretive description explores participants' explanations through the lens of a specific theory with explicit questions, reflections, and critique (Spencer-Cavaliere et al., 2017).

This study used a semi-structured qualitative interview design to give women the opportunity to speak to their own experiences of the phenomenon in question (i.e., sustaining and

returning from concussion in competitive girls' soccer) with the goal of gaining a better understanding of this population as it relates to concussion behaviors. The practice of interviewing is especially powerful with interpretive description, as detailed accounts from participants who experienced a traumatic or impactful event, such as sustaining a concussion at a young age, can develop a powerful description that may appear irrefutable (Sandelowski, 1991, Thorne, 2016). Additionally, the use of descriptive interviews paired with a theoretical framework is useful when the focus of the interviews is to go beyond explanation of individual experience and gather understanding of a larger phenomenon (Patton, 2002). While interpretive description primarily focuses on obtaining detailed accounts and developing an understanding of specific phenomena from various experiences with the topic of concussions, the theory of planned behavior adds an additional layer for understanding an individual's intentions and beliefs and how that may impact the interpretation of the phenomena itself.

Participants & Recruitment

Eight participants (Table 1) completed all aspects of this study. Study participants were purposively sampled to include individuals who: (a) identified as female, (b) were under the age of 18 at the time of concussion, (c) played on an organized, competitive youth soccer team (e.g., interscholastic or club soccer), (d) sustained one or more concussions while playing soccer, (f) played soccer after 2005, and (e) were willing and able to complete one semi-structured interview. Potential participants were not eligible for the study if they: (a) do not identify as female, (b) did not play at least one season of soccer after 2005, (c) did not receive a formal concussion diagnosis, (d) did not sustain their reported concussions while playing soccer, (e) only sustained concussions at 18 years of age or older, or (f) are unwilling or unable to complete one semi-structured interview.

Participants were recruited through college email listservs; online message boards for university students interested in research opportunities; social media pages for recreational soccer leagues and women's club teams (e.g., Facebook, Instagram, Reddit); and local sports teams in the United States. Participants were not contacted directly by the research team but either received an email from the listserv director or accessed the publicly available social media post. In either instance, the recruitment message contained a greeting, a short description of the study, and a link to a demographic screening questionnaire (Appendix B). Prior to recruitment, all study procedures were approved by the human subjects research institutional review board of the University of Georgia.

Table 1

Participant Characteristics

Name	Age	Years playing soccer	Type of competitive team	Number of concussions
Alex	20	15	High school, club	2
Jennifer	31	12	High school, club	3
Lindsey	24	13	High school	3
Carmen	22	12	High school	2
Ana	20	7	Club soccer	2
Denise	29	14	High school	3
Macy	20	14	High school, club	1
Abby	20	14	High school, club	1

Data Collection

Data sources for this study include interviews, interview notes, and information from a screening questionnaire such as number of concussions received and years of youth soccer playing experience.

Potential participants accessed a demographic screening questionnaire by clicking on the link embedded in a listserv email or social media posting. The questionnaire was used to gather information about potential participants including age, gender identity, youth soccer experience, and concussion history. This information was reviewed by the researcher to determine whether each potential participant met the study inclusion criteria. Qualified potential participants who were selected for study inclusion received a recruitment email from the researcher (Appendix C) that included a description of the study and an informed consent document (Appendix D). Only individuals who returned the signed consent document via email were enrolled in the study. Once informed consent was furnished and enrollment was confirmed, the researcher contacted the participant via email to schedule a one-to-one, semi-structured Zoom interview at the time of their choosing. Zoom was used as an interview modality for this study because it offers a convenient and comfortable means of collecting data from a geographically heterogeneous sample. Recently, Oliffe and colleagues (2021) outlined three major benefits of remote video interviewing. First, researchers found that participants reported emotional ease when sharing valuable stories and experiences using the virtual platform. Second, participants in this study found it convenient and comforting to complete interviews from home or another environment of their choosing—there was no travel required for the participants. Finally, since there was no travel required for the researchers or participants, recruitment could be widespread beyond geographical or financial confines (Oliffe et al., 2021).

Each one-on-one interview used the interview guide with questions rooted in the extended theory of planned behavior that was developed for this research (see Appendix A). This interview guide began with questions developed from the literature, and these questions were vetted by a panel of researchers with backgrounds in sport pedagogy and qualitative research. The panel offered feedback on clarity and relevance, and the interview guide was revised and finalized. The interview guide served as the scaffold for each semi-structured interview, which provided flexibility for the participant to guide the direction of the interview while still staying on-topic with help from the interviewer. Using this interview approach, the questions focused on the lived experiences of the participants and their athlete self-identity, intentions, attitudes, beliefs, subjective norms, group/team norms, and perceived behavioral control towards concussion. Relevant follow-up questions that did not appear on the interview guide were asked, as the participants guided the interview in specific directions based on what they shared about their experience (Roulston, 2021).

Starks and Trinidad note that in qualitative research, "theoretical saturation occurs 'when the complete range of constructs that make up the theory is fully represented by the data'" (as cited by Saunders et al., 2018, p. 1895). In this study, data and theoretical saturation was met when participants continue to address all components of the theory, which occurred after the eighth participant was interviewed.

Researchers view the world through a specific lens developed from their own personal experiences and beliefs, which inherently impacts their approach to research (Jacobson & Mustafa, 2019). Therefore, researchers must offer an explicit understanding of their positionality in comparison to the participants in their study, as this provides necessary context regarding any power relations within the research process (Jacobson & Mustafa, 2019). A researcher's

understanding of their positionality can be developed through the reflexivity process. As Roulston (2010) points out, "reflexivity opens up possibilities to provide more complicated representations of the research data and multi-layered accounts incorporating the researcher's voice" (Roulston, 2010, p. 3). By developing an understanding of positionality through the reflexivity process, the researcher and the participants are aware of the researcher's motivations for conducting the specific research. The researcher used reflective interview notes to help identify any possible personal bias and helped the researcher stay grounded in the context of the study and each participant's individual experience (Walker et al., 2013).

Information shared in an interview is often personal in nature and could jeopardize the participant's status or personal comfort in a social system or professional organization (DiCocco-Bloom & Crabtree, 2006). Thus, participant confidentiality and privacy are protected with many different processes. Data were kept in a dual-authenticated device in a university account. Potentially identifiable participant information remains confidential, and pseudonyms were used to protect their identity. All participant information remains confidential to the researcher only.

Positionality

Positionality is a combination of an individual's worldview and how their beliefs and values may inform their research (Holmes, 2020). As a former female youth soccer player with ten years of playing experience through the collegiate level, I have a vested interest and personal connection to the population and issue being studied. While I never sustained a concussion myself, I watched many of my friends and former teammates receive concussions during practices and gameplay. This perspective informed my approach to the study at all phases, from development of interview questions to data analysis and reporting.

When undertaking qualitative research, it is impossible to eradicate the researcher's background, including factors such as gender, socioeconomic class, or race (Bourke, 2014). I cannot remove any bias or unique perspectives I have regarding the topic of concussion behavior in youth sport. Instead, I sought to remain acutely aware of potential biases and perspectives and how they could inform this study. Throughout each interview, I disclosed this information and shared my unique perspective as a former player with each participant. To help address potential bias from influencing the data collection and analysis, I used safeguards such as member checking and utilizing peer debriefing throughout the research process. Detailed information regarding trustworthiness is presented in the Data Quality section of this chapter.

Approach to Data Analysis Procedures

Thematic analysis was selected for this study as it takes rich data sources and codes them into common themes among all participants. According to Ryan and Bernard (2003), thematic analysis creates a consistent and concise narrative that considers the individual experiences of the participants and examines them as a piece of a larger phenomenon. Themes are often derived from empirical data, such as common points of discussion among multiple participants. As the authors note, "even with a fixed set of open-ended questions, one cannot anticipate all the themes that arise before analyzing the data" (Ryan & Bernard, 2003, p. 88). This presents a unique challenge in qualitative research and shows the importance of a thorough data analysis once all the data have been collected.

Interviews were transcribed verbatim and analyzed throughout the data collection process. During the transcription process, participant names were replaced with pseudonyms and identifying information such as team or coach names and locations were replaced with general terms to support participant confidentiality. Each interview was read and coded for potential

themes. These themes were identified based on common attributes among participant responses such as frequency, uniqueness, and previously unrecognized concepts (Merriam, 1998). Themes were coded based on the research questions, specifically taking into consideration theory of planned behavior constructs. Thematic analysis is a widely used method in qualitative research, as it "can be a method that works both to reflect reality and to unpick or unravel the surface of 'reality'" (Braun & Clarke, 2006, p. 81). Thematic analysis has been used in previous research on understanding concussion attitudes (Chrisman et al., 2013; Kroshus et al., 2014) and has been established as an effective data analysis method.

Trustworthiness

To establish quality within this study, various strategies were used to support trustworthiness, including familiarity with the topic being studied by an in-depth examination of existing scholarly literature and non-empirical sources such as social media and news outlets. Next, a critical friend evaluated each aspect of the study and debriefed with the researcher. To enhance the data quality of the study, the researcher developed professional rapport with the participants during data collection to foster elaboration and clarification throughout the interviews (Thorne, 2016). In interpretive description, "the core of what you are seeking is contained somewhere within what is articulable and shareable by the individual in his or her own context, way, and time (Thorne, 2016, p. 140). It is up to the researcher to uphold quality in the study to encourage the participants to share their experiences with the topic of study.

According to Tracy (2010), there are eight criteria of quality in qualitative research, including: (a) worthy topic, (b) rich rigor, (c) sincerity, (d) credibility, (e) resonance, (f) significant contribution, (g) ethics, and (h) meaningful coherence" (Tracy, 2010, p. 839). First, a worthy topic is defined as one that is timely, relevant, significant, and engaging. The research

topic was developed in collaboration with the thesis committee chair to deem it worthy of further investigation. Based on the seriousness of concussion in youth sports and the relative paucity of research surrounding concussion-related research among female youth athletes—especially from a qualitative perspective—the topic was deemed worthy of scholarly attention. Second, a study of rich rigor uses abundant and appropriate theoretical concepts and data. In this study, rich rigor was sought through in-depth analysis of all the data and an insightful discussion of the findings. Additionally, multiple sources of data such as interviews, reflective notes, and theory and analysis used in previous research on the topic was used. Next, sincerity is demonstrated by self-reflexivity and transparency while credibility reflects thick description and triangulation of multiple data sources. In the present study, sincerity and credibility came from the researcher's positionality as a former youth soccer player and the development of reflexivity throughout the research process. Further, data triangulation using interviews, existing research, questionnaire responses, and reflective notes developed qualitative credibility. Multiple sources of data helped with data triangulation, as validating information gathered from participant interviews by checking other forms of evidence can confirm what is reported by the participants in the interviews (Patton, 1999). This process can "increase confidence greatly in the final results" (Patton, 1999, p. 1995). Resonance occurs when the research influences the audience through "naturalistic generalizations" and "transferrable findings" (p. 840). Here, resonance came from the qualitative interview process and use of thick description of the problem being studied to help readers understand the importance of the research topic. Research can provide significant contribution conceptually, morally, or practically, to name a few. There is potential for significant contribution to be made to the field, as this project suggests further directions to take the research. Good ethics were demonstrated procedurally (IRB/human subjects approval),

situationally and culturally, and relationally. This research upheld good ethics by maintaining the confidentiality of the participants and allowing them to discontinue their involvement the study at any point. Finally, meaningful coherence occurs when the study "achieves what it purports to be about, uses methods and procedures that fits its stated goals, and meaningfully interconnects literature, research questions/foci, findings, and interpretations with each other" (p. 840). Meaningful coherence was achieved in this study with clearly stated purposes, findings, and connections to existing literature on the subject.

CHAPTER FOUR

STUDY MANUSCRIPT

Abstract

Concussions are a common occurrence in athletics, especially adolescent sports. While the scholarly literature has documented the nature of concussions and their implications, there has been less attention given to the intrinsic and extrinsic factors that may contribute to an athlete's decision to return to play (RTP) after sustaining a concussion. Female athletes face additional concussion risk as they are physiologically at higher risk of concussions, have a greater likelihood of not reporting concussions, and encounter internal and external pressures to play through or return from injury prematurely because of a sport ethic that is shaped by traditional masculine sport stereotypes. The purpose of this study was to investigate the intrinsic and extrinsic factors contributing to youth female soccer players' decisions to RTP after sustaining a concussion. Eight former female youth soccer players (aged 20-31 years) who had sustained at least one concussion during youth soccer participated in this study, completing a semi-structured interview with questions about attitudes, intentions, social influences, and personal beliefs regarding sport-related concussions. Data analysis yielded three interrelated themes: "Males are taken more seriously when they are injured:" Gender and Concussion Attitudes; "I didn't want to seem like a baby": Extrinsic Factors That Influence RTP; and "The biggest pressure was probably from myself more than anyone else": Intrinsic Factors That Influence RTP. These findings indicate the importance of understanding concussion behaviors specific to the population of youth female soccer players.

Concussion, "a type of traumatic brain injury caused by a bump, blow, or jolt to the head or by a hit to the body that causes the head and brain to move rapidly back and forth," is a common injury in contact sports (Donnell et al., 2018, p. 163). Concussions pose a serious risk of long-term disability (i.e., traumatic brain injury), but have often been underdiagnosed and mismanaged, in part because concussion symptoms are not always readily observable to stakeholders like coaches and parents (Donnell et al., 2018). Fortunately, concussion education and return to play (RTP) protocols have improved in the last fifteen years due to legal and scientific advancements (Alsalaheen et al., 2016; Bompadre et al., 2014; Rivara et al., 2014). Implemented in 2009, the Lystedt Law was the first government legislature to offer legal guidelines for how to acknowledge, identify, and treat concussions in youth sports. This law has helped medical professionals develop protocols for determining when an athlete can RTP safely. After an athlete sustains a concussion, there is a post-concussive period focused on healing and rehabilitation. Once recovery is complete, a medical professional should complete an assessment of "physical readiness" to determine if the athlete is ready to safely RTP (van Ierssel et al., 2022).

Despite progress in concussion education and management, young athletes still may not recognize the inconsistent and unclear signs of a concussion (Kroshus & Chrisman, 2019; Zynda et al., 2020) or may not report concussion symptoms because they do not want to lose playing time or appear weak to their teammates and friends (Caron et al., 2021; Kroshus et al., 2014). One specific population that faces concussion concerns is female athletes. Research shows that female athletes, including soccer players, are two times more likely to sustain a concussion than male athletes while playing sports under the same rules (Kroshus et al., 2017), and girls are up to five times more likely to continue play with a concussion compared to boys (Zynda et al., 2020).

Physiological and social differences between males and females are two factors that contribute to this concussion-gender discrepancy (Berg et al., 2022; Covassin & Elbin, 2011). Physiological differences include head and neck sizes between male and female athletes and reduced neck strength among female athletes compared to their male counterparts (Covassin & Elbin, 2011). Socially, sport environments have been well-established as masculine domains (Kroshus et al., 2017; Waldron & Krane, 2005). When female athletes feel pressure to conform to masculine sport ethic (e.g., toughness, risk-taking), they may be less likely to disclose concussion symptoms or underreport symptom severity to RTP quickly despite their understanding of the seriousness posed by continuing to practice and play with acute symptoms (Kroshus et al., 2017; Sheffield & Stutts, 2020; Waldron & Krane, 2005).

Conceptual Framework: Extended Theory of Planned Behavior

When attempting to examine motivational factors that influence a behavior such as concussion reporting and RTP, it can be useful to employ an existing theoretical framework (Register-Mihalik et al., 2013). The theory of planned behavior (TPB) was selected to guide the present inquiry because it is a belief-to-behavior model that has been used extensively by researchers to investigate health-related volitional behaviors, including concussion reporting (Azjen, 1991; Kroshus et al., 2014). First developed by Azjen (1991), TPB holds that one's likelihood to engage in a behavior is controlled chiefly by their intention to do so. In turn, intention is shaped by three factors: (a) the positive or negative appraisal regarding the behavior (attitude); (b) one's perception of how salient individuals like family members think of the behavior (subjective norms); and (c) how successful the individual believes they will be at the behavior (perceived behavioral control). TPB has been used in previous studies investigating concussion reporting behaviors in specific populations such as youth athletes and has been a

useful theoretical tool for this topic (Kroshus et al., 2014; Chrisman et al., 2014). One study of sport-related concussions found that TPB variables were predictive of intention to report concussion (Register-Mihalik et al., 2013). However, researchers noted that intention to report concussion was not always aligned with behavior when concussions occurred. Thus, the authors identified the need to examine additional factors beyond those central to TPB.

Noting similar issues with the traditional TPB framework, Hamilton and White (2008) extended the theory to include three additional factors: self-identity, group norms, and social support, which will be considered in this study. While this newer model has been used to evaluate behavior in general physical activity contexts, it has not been used in the specific context of concussion reporting behaviors (Hamilton & White, 2008). The extended version of TPB used in this study considers more nuanced behavioral aspects that may influence reporting intentions in the specific population of youth female soccer players (see Figure 4.1). The extended form of TPB was selected for use this study, as Hamilton and White found that self-identity and group norms were significant predictors of intention to engage in regular physical activity (Hamilton & White, 2008). Self-identity and group norm factors are not included in the traditional TPB framework, whereas the extended TPB model includes all facets of the original TPB model plus the three additional self and social influences. By incorporating six factors of behavior rather than three, this study aims to address the need to examine additional factors that influence behavior beyond the traditional TPB model. Therefore, the purpose of this study is to investigate the intrinsic and extrinsic factors contributing to youth female soccer players' decisions to RTP after sustaining a concussion.

Methods

This study adopted an interpretive descriptive approach to investigate the lived experiences of former female youth soccer players who sustained a concussion while playing. Interpretive descriptive designs "search out and explore features or elements of a common issue but will seek to render an understanding of them that honors their inherent complexity" (Thorne, 2016). An extension of qualitative description, interpretive description explores participants' accounts through the lens of a specific theory with explicit questions, reflections, and critique (Spencer-Cavaliere et al., 2017). Additionally, descriptive interviews paired with a theoretical framework allow the inquiry to go beyond explanation of individual experiences to the larger phenomenon that underpins them (Patton, 2002). While interpretive description primarily focuses on obtaining detailed accounts and developing an understanding of specific phenomena from various experiences with the topic of concussions, TPB provides a theoretical lens through which participants' beliefs and experiences may relate to the larger phenomenon in question (i.e., RTP decisions following concussion).

Participants

Study participants were purposively sampled to include individuals who: (a) identified as female, (b) were under the age of 18 at the time of concussion, (c) played on an organized, competitive youth soccer team (e.g., interscholastic or club soccer), (d) sustained one or more concussions while playing soccer, (f) played soccer after 2005, and (e) were willing and able to complete one semi-structured interview. Participants were recruited through college email listservs; online message boards for university students interested in research opportunities; social media pages for recreational soccer leagues and women's club teams (e.g., Reddit); and local sports teams in the United States. Participants either received an email from the listserv

director or accessed the publicly available social media post. In either instance, the recruitment message contained a greeting, a short description of the study, and a link to a demographic screening questionnaire.

Prior to enrollment, potential participants accessed a demographic screening questionnaire via a QR code or link embedded in a listserv email or social media posting. The questionnaire gathered the potential participant's age, gender identity, youth soccer experience, and concussion history. Qualified individuals were invited to participate through a recruitment email from the researcher that with a description of the study and an informed consent document. Only individuals who returned the signed consent document via email were enrolled in the study. Prior to recruitment, all study procedures were approved by the human subjects research institutional review board of the University of Georgia.

Eight former female youth soccer players (aged 20-31 years) met the inclusion criteria for this study and participated in an interview (Table 4.1). All participants played at least one year of competitive youth soccer while younger than eighteen-years-old and sustained at least one concussion during practice or gameplay. Additionally, all participants played organized, competitive youth soccer in the continental United States. In this study, data and theoretical saturation were met when participants continue to address all components of the theory, which occurred after the eighth participant was interviewed.

Data Collection

Data sources for this study include interviews, interview notes, and information from a screening questionnaire such as number of concussions received and years of youth soccer playing experience. The primary data source was a one-to-one, semi-structured Zoom interview. Zoom was used as an interview modality for this study because it offers a convenient and

comfortable means of collecting data from a geographically heterogeneous sample. While the use of remote interviews has sometimes drawn criticism as potentially undermining the quality of interview data (Johnson et al., 2021), they have become an increasingly common tool among qualitative researchers. Recently, Oliffe and colleagues (2021) outlined three major benefits of remote video interviewing. First, researchers found that participants reported emotional ease when sharing valuable stories and experiences using the virtual platform. Second, participants found it convenient and comforting to complete interviews from home or another environment of their choosing—there was no travel required for the participants. Finally, since there was no travel required for the researchers or participants, recruitment could be widespread beyond geographical or financial confines (Oliffe et al., 2021).

Each one-on-one interview used an interview guide with questions rooted in the extended TPB that was developed for this research. The initial interview guide was developed from questions based on the literature, and interview questions were vetted by a panel of researchers with backgrounds in sport pedagogy and qualitative research. The panel offered feedback on clarity and relevance, and the interview guide was revised and finalized. Interview questions focused on the lived experiences of the participants and their athlete self-identity, intentions, attitudes, beliefs, subjective norms, group/team norms, and perceived behavioral control towards concussion. Sample questions include: “did gender impact people’s attitudes toward concussion?”; "describe an instance when you pressured yourself to play even though you might have had a concussion”: and “how did your self-identity as a female athlete impact your decision to return to play?”. The interview guide served as the scaffold for each semi-structured interview, and relevant follow-up questions that did not appear on the interview guide were asked as needed

to allow participants to guide the interview in specific directions based on what they shared about their experience (Roulston, 2021).

Researchers view the world through a specific lens developed from their own personal experiences and beliefs, which inherently impacts their approach to research (Jacobson & Mustafa, 2019). Therefore, researchers must develop an understanding of their positionality in comparison to the participants in their study, as this provides necessary context regarding any power relations within the research process (Jacobson & Mustafa, 2019). A researcher's understanding of their positionality can be developed through the reflexivity process. As Roulston (2010) points out, "reflexivity opens up possibilities to provide more complicated representations of the research data and multi-layered accounts incorporating the researcher's voice" (p. 3). By developing an understanding of positionality through the reflexivity process, the researcher and the participants are aware of the researcher's motivations for conducting the specific research. The researcher used reflective interview notes to help identify any possible personal bias and helped the researcher stay grounded in the context of the study and each participant's individual experience (Walker et al., 2013).

Data Analysis

Thematic analysis was selected for this study as it takes rich data sources and codes them into common themes among all participants. According to Ryan and Bernard (2003), thematic analysis creates a consistent and concise narrative that considers the individual experiences of the participants and examines them as a piece of a larger phenomenon. Thematic analysis is a widely used method in qualitative research, as it "can be a method that works both to reflect reality and to unpick or unravel the surface of 'reality'" (Braun & Clarke, 2006, p. 81). Thematic

analysis has been used in previous research on understanding concussion attitudes (Chrisman et al., 2013; Kroshus et al., 2014) and has been established as an effective data analysis method. During the transcription process, participant names were replaced with pseudonyms and identifying information such as team or coach names and locations were replaced with general terms to support participant confidentiality. Each interview was then analyzed, and themes were developed using a five-step process (Braun & Clarke, 2006). First, the researcher read each interview at least twice to become familiar with the data and to identify passages of interest. Next, initial codes were applied to the passages and applied across all interviews to identify patterns. Similar codes were organized to form themes that represent the entirety of the data. Selected quotes and passages were reviewed to confirm that they accurately reflected the theme. Finally, the themes were defined and presented as the final study results. These themes were identified based on common attributes among participant responses such as frequency, uniqueness, and previously unrecognized concepts (Merriam, 1998). After themes were developed and described, the researcher debriefed with a critical friend, who reviewed the codes and themes to ensure that they accurately reflected interview data.

Data Quality

According to Tracy (2010), there are eight criteria of quality in qualitative research. She writes that "high quality qualitative methodological research is marked by a (a) worthy topic, (b) rich rigor, (c) sincerity, (d) credibility, (e) resonance, (f) significant contribution, (g) ethics, and (h) meaningful coherence" (Tracy, 2010, p. 839). First, a worthy topic is defined as one that is timely, relevant, significant, and engaging. Based on the seriousness of concussion in youth sports and the relative paucity of research surrounding concussion-related research among female youth athletes—especially from a qualitative perspective—the topic was deemed worthy

of scholarly attention. Rich rigor was sought using multiple data sources including interviews, surveying, and reflective notes (i.e., data triangulation) as well as in-depth analysis of all the data and an insightful discussion of the findings in the context of the theoretical framework (i.e., TPB) and previous literature. Sincerity and credibility came from researcher positionality and the development of reflexivity throughout the research process. Resonance came from the qualitative interview process and use of thick description of the problem being studied to help readers connect with the topic. There is potential for significant contribution to be made to the field, as this project suggests further directions to take the research. This project upheld good ethics by maintaining the confidentiality of the participants and allowing them to opt out of the project at any point. Finally, meaningful coherence was achieved with clearly stated purposes, findings, and connections to existing literature on the subject.

Findings & Discussion

Three themes were developed through the data analysis process: "Males are taken more seriously when they are injured:" gender and concussion attitudes; "I didn't want to seem like a baby": extrinsic factors that influence RTP; and "The biggest pressure was probably from myself more than anyone else": Intrinsic factors that influence RTP. These themes are described and discussed below.

"Males are taken more seriously when they are injured": Gender and Concussion Attitudes

The need to prove oneself in sport is one of the most common topics in conversation around sport ethic (Malcom, 2006). Female athletes are especially ingrained with the need to prove themselves, as sports are often seen as a male-dominated domain (Malcom, 2006). In the present study, most participants reflected upon the need to demonstrate their worthiness to play soccer through toughness, something that many attributed to their gender, at least in part. This

notion was supported by Jennifer, who noticed there was a gender component with girls' sports being perceived as less serious. She said:

> I really think there's a minimization for women with injuries in general. Like you don't get as hurt in women's sports and it's not as bad in women's sports compared to men's sports, which is ridiculous. That definitely was the case when I was an athlete.

This sentiment was echoed by Ana, who felt that there is a gender stereotype surrounding injuries in girls' soccer compared to boys' soccer. She described not only a minimization of the number and severity of injuries among female athletes, but a seemingly subconscious feeling that by sustaining an injury, female athletes run the risk of being perceived as less capable than their male counterparts (reflective notes). Ana described that:

> Girls' soccer has a stereotype, I guess, of not being as tough as guys soccer, so…I don't want to seem like I can't handle the sport. I was just like, "I want to seem tough because in boys' soccer everyone gets concussions, and they just move on." I feel like sometimes with girls' soccer, if you make a big deal out of it, they're like "well, you just can't handle the sport like all these other people." So, I do think there is some type of gender bias where girls' concussions just aren't taken seriously enough because either they want to seem tough enough or it's played off as part of this sport, and if you can't handle it, that's the way it is.

While there are physiological components such as smaller head-neck segment mass in females compared to males (Covassin & Elbin, 2011), Ana's reflection alluded to the notion of "sport ethic," wherein athletes gain respect from their teammates and coaches when they compete while injured (Waldron & Krane, 2005). By attempting to play through concussion, Ana's story showed that she subscribed to the sport ethic of toughness, as she felt she must prove herself as

tough and therefore worthy of playing the sport (reflective notes). This experience is aligned with previous literature in which female athletes described playing through pain to avoid appearing weak (Sheffield & Stutts, 2020; Waldron & Krane, 2005). Another participant, Lindsey, also reflected on sport ethic as a female athlete. Specifically, she discussed the notion that skillfulness, toughness, and strength were intertwined concepts in the context of competitive soccer, all traits typically viewed as innate among male, but not female players. She highlighted:

> I do think there's a certain idea of you have to be as good as the boys and you have to be more aggressive and push yourself, because you don't want them to look at your female sport and think of it as weak or not as good because we don't move as fast, or all the stupid things people say about female sports.

Another participant, Alex, also discussed gender differences and concussion, noting that medical treatment and understanding of concussion is often "based off of the male body and it's not always translated to the female body," which she believed impacted the way coaches and training staff responded to potential concussions among her and her female teammates. Additionally, she reported a fundamental difference in how girls' and boys' teams approached training and preparation (e.g., strength and conditioning) at her school, and the potential impact that it had on injury management. Alex explained:

> I think that males in competitive sports do a lot more strength training on average, just because they enjoy it more or they think of that as a male activity…a lot of girls who were just playing soccer for fun were not going out and doing strength training, which I feel like girls should take seriously, because it is much easier to get a concussion if you haven't built up your core and your neck muscles to sustain those kinds of blows.

Beyond differences in preparation, some participants felt that there was a difference in resources dedicated to injury response and management between male and female teams. For example, when there were medical personnel such as athletic trainers at school games, these resources were allocated disproportionally to the male teams. Jennifer highlighted some irony at her school about the success of the teams versus who received concussion resources:

> Our boys' sports were mediocre, and our football team was terrible…our female athletes were actually much more accomplished…better athletes than the guys. But then to have ImPACT testing go to the football team first…and then it went to everybody else, it just developed this belief that the boys' teams needed it more and you can't get as hurt in women's sports as you can in men's sports.

Despite the girls' teams finding more success, they lacked concussion education and management resources compared to the boys' teams. Jennifer did not attribute the difference in treatment to an explicit belief that "the boys are better than the girls," but instead posited that athletic staff held an implicit belief that girls sports were less likely to yield concussions "because you can't get as hurt because it's girls' sports. I guess it's something internal, there's an undercurrent of misogyny in there, but it was not overt." Another participant, Denise, also recalled a discrepancy of care between how female and male sports, especially football, were treated: "they always had more trainers, more resources, all of that," something that made her feel that her value and safety were secondary to male athletes at her school "like I maybe wasn't as equal to, like, a football player." This sense of inequality was further realized in the way that injuries were handled during girls' games, as Denise reflected:

> Whenever we would have injuries on the field, we [the team and coaches] would be the ones to carry each other off, because I think we were kind of like, "who knows when the

> trainer will get here?" I am thinking of one time where a girl had her shin bone pretty much separated. It was completely sliced open. And we immediately started moving her…we didn't know where the trainer was, and so it was very much so that we responded to the crisis more than waiting for someone to come help us.

Participants' reflections on gender norms in their sport experiences is well-aligned with existing literature. In sports culture, social norms are usually embedded with the assumptions that men and boys are expected to demonstrate masculine traits while women and girls are supposed to demonstrate feminine traits (Schmalz & Kerstetter, 2006). Sports that demonstrate masculine characteristics are often described as challenging, violent, and fast-paced, while sports that are perceived as feminine are focused more on the aesthetic and graceful features found in dance and synchronized swimming (Klomsten et al., 2005). Participants felt that their girls' soccer teams were seen as less important or a lower priority than boys' sports, and this message was received with an inequal allocation of resources. Many participants felt that their sport was seen as less competitive than male sports and that they were not as likely to get seriously injured.

Through the lens of TPB, attitudes are an individual's beliefs about potential consequences of a behavior, such as reporting a concussion (Ajzen, 1991). When female athletes observe that trainers and coaches take girls' sports less seriously, they may internalize similar attitudes regarding likelihood and seriousness of injury. While the specific impact of gender on attitude toward injury reporting is not well-researched, previous research concerning attitude formation and concussion reporting found that high school athletes of any gender who held favorable attitudes regarding the seriousness of concussion were more likely to intend to report concussions that those who regarded concussion as a minor injury (Sullivan et al., 2021). Further, a recent study of concussion knowledge and treatment among high school girls' soccer

coaches found that appropriate risk management strategies were not employed by most participants (Kim et al., 2020). The authors posited that negative attitudes toward RTP processes were likely a major contributor to poor concussion management practices. In the present study, participants described receiving negative implicit messages from coaches and trainers regarding concussion in girls' sports, which shaped their own concussion attitudes. In turn, participants noted that these negative or indifferent attitudes regarding concussion may have impacted the intention to take concussions seriously by reporting symptoms or following RTP protocols. Finally, player and team personnel attitudes toward concussion appear to have created pressure for participants to rush RTP or play through a concussion, as described in the second theme.

"I didn't want to seem like a baby": Extrinsic Factors That Influence RTP

Often, individuals must self-report concussion symptoms and severity to receive a concussion diagnosis, and existing literature demonstrates that athletes may intentionally downplay or disguise their symptoms to RTP as quickly as possible (Chrisman et al., 2013). Broadly, RTP ranges from "full return without restrictions" to "allowed to practice" with no contact (Creighton et al., 2010). However, many athletes take it upon themselves to determine when they RTP, fearing they will let their teammates down or be judged as weak. All eight participants described a high level of control over their RTP process, as coaches often allowed players to RTP when they felt ready, without consultation from medical professionals. Despite this, all participants recalled feeling pressure to RTP as quickly as possible, and most participants felt that external pressure from teammates and coaches, often because of their role within the team structure.

For example, Lindsey shared that the pressure of being the youngest player on the team influenced how she handled her concussion. When she sustained her concussion, Lindsey was

playing on the highest-level club team for the age group, and she already felt inferior for being younger and less skilled than her teammates. She reflected, “I think that played a role in the teammates kind of looking down on me already, and I didn't like that they probably were looking down on me further for being a baby.” Like Lindsey, Ana attempted to hide her concussion because she “didn’t want to seem like a baby” and feared that her team would “think I can't handle the sport…It was just like, you play hard. If you get hurt, you get up and you keep going.”

While Ana and Lindsey felt pressure to return to play to prove that they belonged on their respective teams, other participants felt pressure because their teams relied on them to win. For example, Alex felt “that social pressure from your team…either purposefully or unconsciously” to play through injuries and rush her concussion recovery because she was the most talented player and the “person that people rely on to score…most of the goals.” Likewise, Denise—a starting goalkeeper for her team—described sitting on the bench and feeling bad when she observed that the second-string goalkeeper was not ready to start the next game and the team would likely lose. After the practice session, she recalled “going to the [athletic] trainer” to convince them to let her RTP sooner. She said:

> “I'm feeling a lot better, I'm good.” And I think it was that I wanted to make sure I was back before the next game, because I didn’t want to continue to let my team down. and I think there's also something with concussion to where you don't have a physical—like it's not obvious, and so I was like, “I'm fine, I can rally, I'll be fine.” It should probably be the exact opposite, but there was this push to get back to it.

Jennifer, now a college soccer coach, also recalled pressure from coaches and teammates when she was out with a concussion on an underperforming team that “needed everybody who could

play" to win games. Like Alex and Denise, she felt that her team "pressured [her] a little bit" during her recovery, as her absence from the team was clearly impacting their success. She said:

> Like, "you can't miss that game, like oh my gosh we really need you, we need you to play." Particularly in high school because I was a freshman playing on the varsity team…and there was that kind of pressure of, "come on, you've got to play."

As a coach, Jennifer empathizes with her coaches' and teammates' perspectives: "frankly…I understand that [pressure] now. I mean I'm not saying it's okay, but I understand that feeling of like, 'oh shit, what are we going to do with this person hurt?'"

For some participants, RTP decisions were shaped by teammates' previous concussion experiences. Carmen recalled that while one teammate missed school after a serious concussion, she was back on the soccer field after only a couple of days, something their coach praised her for. After Carmen's concussion later in the season, her teammate's experience "definitely put pressure on me" to return quickly because "if she can be worse than I am and come back that week …maybe my coach is expecting me to, and some of my teammates are expecting me to." Nearly all participants identified the extrinsic influence from teammates and coaches—whether explicit or implicit—as a source of pressure to RTP quickly or ignore concussion symptoms entirely. Returning to the extended TPB, participant experiences in the present study are illustrative of subjective and team norms common in team sports settings. For example, in their 2013 qualitative study Chrisman and colleagues (2013) used a modified TPB framework to explore concussion reporting among male and female high school varsity athletes. Study findings indicated that while youth athletes understood their seriousness, their decisions to report concussions were influenced by subjective norms, particularly their perceptions of how coaches and teammates would react to decisions to report symptoms or remove themselves from practice

or gameplay. The authors concluded that team and subjective norms play an outsized role in intention to report concussion, even when these norms went against their own concussion knowledge. These norms, in turn, were based on "athletes' perceptions of coach expectations regarding concussive symptom reporting" (Chrisman et al., 2013, p. 334).

"The biggest pressure was probably from myself more than anyone else": Intrinsic Factors That Influence RTP

The final theme pertained to intrinsic factors that contribute to RTP decision-making, specifically, an athlete's self-identity. Self-identity refers to the salient part of an individual's sense of self that informs behavior (Hamilton & White, 2008). The more grounded one is in their identity related to an activity, the more likely they are to do whatever it takes to complete it to support this identity (Hamilton & White, 2008). Some participants did not feel pressure from their teammates or coaches to RTP, but every participant felt internalized pressure that was informed by their self-identity as an athlete. For example, Abby recalled thinking that because her collision "wasn't a hard hit" compared to concussions her teammates had experienced, she probably did not have a concussion, or at least not one serious enough to sideline an athlete like herself. She remembered that:

> I thought about when I had a teammate who was out for a month and came back with the head brace, or my friend who very obviously got hit and was throwing up afterwards. So, from my experience and what I had seen with concussions, it didn't occur to me that it's what had happened when I got hit. I was just like oh, "I just got hit with the ball." So, it wasn't a concern to me that I was going to have any lingering symptoms after that hit.

Abby's self-identity as a capable athlete was threatened by comparing her teammates' concussions—injuries she perceived to be legitimate—with her own concussion, which she

considered to be less serious because it did not involve head-to-head contact with another player. According to Hamilton and White, "when social identity is salient, the individual constructs context-specific group norms based on shared intragroup information and assimilate themselves to these group norms" (Hamilton & White, 2008, p. 58). Self-identity is often informed by group norms, so while the individual is ultimately the agent of their own autonomy, this identity is inherently shaped by the environment and people around them (Kroshus et al., 2015).

Like Abby, Denise also expressed that sustaining a concussion impacted her self-identity as a soccer player. To maintain this identity, she first didn't report the concussion because she "didn't want the confirmation of a concussion" that might have prevented her from playing. Once her concussion was diagnosed, she recalled telling herself she was "fine" and trying to "get through these [concussion] protocols quicker to get back to playing" after injury. Denise went on to describe soccer as central to her identity beliefs because it was "the only thing that mattered to me at that point." She continued:

> I saw soccer as how I would go into higher education. I was a first-generation student, and I saw soccer as the way for me to get out of my small rural town and do something. It was the one thing that I was really into. I was very closeted kid at that point, and it was the one affirming space that I feel like I had, and I think it really consumed everything about my identity.

Denise's story demonstrated that soccer was the only space where she could embrace all aspects of her self-identity. The fear of losing that due to a concussion pushed her to downplay symptoms or rush through protocols (reflective notes).

Like Denise, Carmen also expressed that she rushed her concussion protocol because of her soccer identity and fear of missing playing time. She explained that "the biggest pressure was

probably from myself more than anyone else…it was my senior year, I really wanted to play." Not only was it Carmen's senior year, but her team was winning games and heading to the playoffs. She reflected:

> We ended up going to our state championship that year, so that was definitely part of it. I wanted to get back in and get back to my full playing capacity so that I could be involved in that. It was a big motivator—probably the biggest one.

Carmen recalled that she had worked hard to help her team find success that season, and her self-identity as a soccer player and desire to play with her team in the state championship influenced how she handled her concussion. Like Carmen, Macy expressed how her own self-identity as a tough player caused her to put pressure on herself to push through injuries, including her concussion. Macy reflected, "You don't want to be that person that, for lack of a better word, gives up." She emphasized her feeling that "just because I'm not feeling 100% doesn't mean I shouldn't give 100%." Because they were both standout players on their teams, Jennifer and Alex also put pressure on themselves to keep playing and push through injuries. While most participants felt compelled by teammates and coaches to RTP prematurely, both Jennifer and Alex described it as "internal" (Jennifer) "pressure that I put on myself" (Alex) because being successful soccer players was central to their identities. Jennifer explained:

> It came from the expectation of performing and being a team leader because that's…the role of the goalkeeper, especially on a team where you're one of the only players who can play soccer well. That's where it came from for me—my own head.

Alex described placing a similar kind of pressure on herself, realizing the team would not have any chance of winning if she did not play. She explained that "we wouldn't win if I didn't score

goals, because no one else on our team could score. I put the team on my back instead of worrying more about my health."

The influence of self-identity on concussion behaviors is supported by research conducted by Hamilton and White (2008), in which they proposed an extension of TPB to include the role of the self and social influences on physical activity in adolescents. They found that the more grounded participants were in their physical activity-related identity, the more likely they were to complete physical exercise to maintain this identity. In the present study, participants' need to support their athletic identities influenced their approaches to concussion and RTP decision-making. For example, Abby's identity was challenged by her self-perception that an athlete like herself should be able to play through a concussion she perceived to be "less serious" that those sustained by teammates. Meanwhile, because Denise's perception of soccer as an identity-affirming space was threatened by the possibility of a concussion diagnosis, she pressured herself to rush her concussion RTP to maintain her identity. Finally, other participants felt that their self-identity as a crucial member of the team influenced them to continue playing through concussions. In the extended form of the theory of planned behavior, self-identity is one of the biggest predictors of behavior, as it refers to the salient parts of an individual's sense of self and what is important to them (Hamilton & White, 2008). Participants in this study echoed the importance of self-identity as a predictor of behavior, from finding soccer as a place of self-expression to putting pressure on oneself to play as the best person on the team.

Limitations

There are a few limitations to this study that must be considered. First, all participants were from the United States, so the findings may not represent the experiences of female youth soccer players in other parts of the world. However, this approach was in keeping with the goal

of qualitative inquiries, which often rely on homogenous populations to explore a particular phenomenon in depth (Creswell, 2007). The use of retrospective interviewing could also be considered a limitation, as participants were somewhat removed from their youth soccer experiences. However, retrospective interviews allow participants to reflect on their experiences in their entirety from a position of emotional distance from the phenomenon in question (Paechter, 2012).

Conclusions

The present study extends existing research on concussion in sport into the specific realm of youth female soccer players by exploring their motivations, influences, and behaviors toward concussion and RTP decisions through the lens of TPB. Thematic findings illustrate the impact that concussion attitude, team norms, and self-identity may have when female youth athletes consider decisions regarding reporting and RTP following injury. These findings suggest that extended TPB may be a useful framework to guide coaches, training staff, and female youth soccer players themselves toward a more holistic approach to concussion education. Team personnel and athletic department staffs should be aware of their approach (i.e., attitudes and resources) to concussion prevention and response for girls' soccer teams and how it might shape stakeholder and player attitudes regarding the seriousness of concussion. Similarly, team personnel should be aware of team norms and self-identity beliefs as sources of pressure for players to rush RTP and instead emphasize appropriate messaging when delivering concussion education to players and their families.

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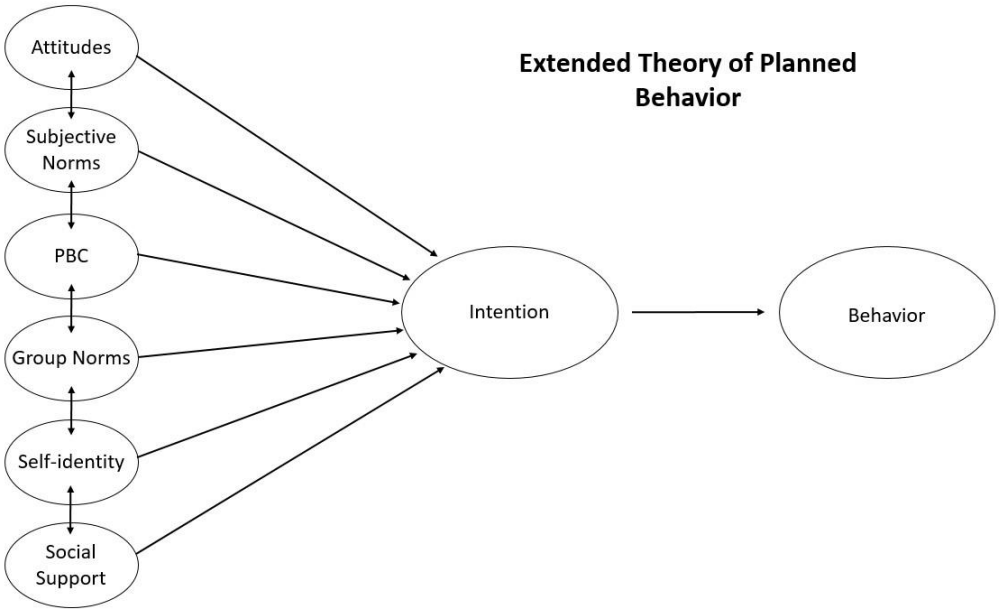
Figure 4.1

Extended Theory of Planned Behavior



Note: Adapted from Ajzen (1991) and Hamilton & White (2008).

Table 1
Participant Characteristics

Name	Age	Years playing soccer	Type of competitive team	Number of concussions
Alex	20	15	High school, club	2
Jennifer	31	12	High school, club	3
Lindsey	24	13	High school	3
Carmen	22	12	High school	2
Ana	20	7	Club soccer	2
Denise	29	14	High school	3
Macy	20	14	High school, club	1
Abby	20	14	High school, club	1

CHAPTER FIVE

CONCLUSIONS

The purpose of this study was to investigate the intrinsic and extrinsic factors contributing to youth female soccer players' decisions to return to play after sustaining a concussion. Existing literature has studied reporting behaviors and intentions of athletes that include female soccer players (Chandran et al., 2020; Chrisman et al., 2013; Kroshus et al., 2015; Kroshus et al., 2017; Myrdal et al., 2017). However, these studies did not focus specifically on youth female soccer players. Indeed, research shows that a significant majority of concussion research has been conducted on male athletes. A recent evidence-based synthesis study conducted by D'Lauro and colleagues (2022) demonstrated that over 80% of concussion literature relied on male participants, with over 40% of the surveyed studies did not include any female participants. The present study extends existing research into the specific realm of youth female soccer players, as it is reasonable to assume that not all populations will have the same motivations, influences, and behaviors toward concussion and the return to play decision making process.

This study used an interpretive descriptive approach to explore participants' explanations through the lens of a specific theory with explicit questions, reflections, and critique (Spencer-Cavaliere et al., 2017). Eight participants (aged 20-31 years) completed a semi-structured interview, answering questions informed by an extended form of the theory of planned behavior. These questions focused on aspects such as attitudes, intentions, social influences, and personal beliefs about sport-related concussions. Data sources include demographic questionnaires,

digitally recorded interviews, and reflective notes. Thematic data analysis was conducted, and three themes emerged. The first theme, "males are taken more seriously when they are injured:" gender and concussion attitudes, demonstrated the clear discrepancy between how female athletes feel their sport-related concussions are perceived as less-serious than their male peers. Many participants described the frustration they felt when playing, as they described a clear gender stereotype with how injuries were minimized in girls' sports. This theme reflects how attitudes, or the athlete's beliefs about potential consequences (positive or negative) of performing a behavior, significantly impacts concussion behavior in this population. Participants recognized that male sports injuries were taken more seriously and felt there were negative consequences when they disclosed an injury such as a concussion, as girls' sports were perceived as less aggressive and therefore not a space where serious injuries could occur. The second theme, "I didn't want to seem like a baby": extrinsic factors that influence return to play, discussed the social pressures that influenced participants' decisions surrounding their concussions. Participants described both explicit and implicit pressure from many outside sources, including perceived societal expectations and group or team norms. In the extended form of the theory of planned behavior, the implicit and explicit expectations of an individual as a member of a group or team will shape everyone's behavior. Group norms are a strong predictor of behavior, as many participants in this study felt both implicit and explicit expectations from their teams and coaches about how they should handle their concussion. The third and final theme, "The biggest pressure was probably from myself more than anyone else": intrinsic factors that influence return to play, described the self-imposed pressure participants faced in return to play decisions. Specifically, the self-identities of the participants significantly contributed to how they handled their concussions. In the context of an extended form of the theory of planned

behavior, self-identity refers to the most important aspects of an individual's sense of self and has been shown to predict behavior (Hamilton & White, 2008). Every participant in this study recognized that for various reasons, self-identity played a role in their concussion behaviors.

These three themes identify both intrinsic and extrinsic factors that contribute to post-concussion return to play decision-making in the population of youth female soccer players. As existing literature demonstrates, female youth athletes are more likely to sustain a concussion and experience symptoms for a longer period than male athletes of the same age playing the same sport due to physiological factors (Covassin & Elbin, 2011). However, concussion attitudes are influenced by factors beyond the physical body composition. As demonstrated in all three themes, social, emotional, and interpersonal factors significantly contributed to how players handled their concussion behaviors. These three themes were explored within the theoretical context of an extended form of the theory of planned behavior (TPB) (Hamilton & White, 2008). While previous studies have investigated concussion attitudes using a traditional theory of planned behavior framework (Chrisman et al., 2013; Kroshus et al., 2015), the extended form of the theory of planned behavior facilitates a deeper investigation of factors such as group norms and self-identity that are not included in the traditional TPB model. It is important to consider these additional factors and how they contribute to concussion behavior, because as the current study identifies, these are some of the most significant factors that contribute to concussion attitudes and the return to play decision making process.

The findings from this study align with previous research on external perception (Kroshus et al., 2015) and the role of gender in sport and sport culture (Kroshus et al., 2017). Participants described feeling pressure to play through a suspected concussion or return to play quickly as to not appear weak to their teammates or coaches. Additionally, many participant

narratives indicated that the gender bias of sport culture influenced how they thought of and subsequently handled concussions. Specifically, participants described how they felt the boys' sports were taken more seriously and that the perception was that girls' sports were not as tough as boys' sports so the female athletes could not get as seriously injured.

It is evident from these findings that research on concussion attitudes and behaviors cannot be generalized among all populations. The qualitative lens used in this study gave participants the unique opportunity to share their experiences as former female youth soccer players, which is a specific subset of the population. Therefore, the findings from this study shed additional light on concussion behaviors and attitudes as they pertain to the specific population of youth female soccer players. This study's unique contribution to the literature was collecting, coding, and discussing detailed accounts of participants' firsthand experiences with concussion in youth girls' soccer. Interview questions focused specifically on the factors that directly contributed to the participants' decision making following a concussion, such as attitudes, group norms, and self-identity. While research has been conducted on reporting behaviors and intentions of athletes that include female soccer players (Chandran et al., 2020; Chrisman et al., 2013; Kroshus et al., 2015; Kroshus et al., 2017; Myrdal et al., 2017), existing studies did not focus specifically on youth female soccer players as their own, unique population. This study identified the behaviors, motivations, and influencing factors that are unique to the population of female youth soccer players regarding concussion and the return to play decision making process.

There are a few limitations to this study that must be considered. First, all participants were from the United States, so the findings may not represent the experiences of female youth soccer players in other parts of the world. The decision to limit participants to the United States

was intentional, as the concussion education laws and regulations are specific to the United States. Other countries may have different laws or no regulations in place for concussion education, and this would likely influence concussion attitudes, treatment, and rules among youth athletes and coaches. Therefore, limiting participants to the United States maintained a consistent background for concussion education laws in the country.

Qualitative interview research requires detailed questioning and investigation beyond a surface-level description of an experience, so detailed retrospective accounts can be obtained (Ritchie & Lewis, 2003). However, the nature of retrospective interviewing means all participants are working from memory. Some participant accounts of the immediate moments following a concussion were difficult to remember in detail, especially considering concussions can impact short-term memory recall. Further, the age range of participants was wide, and there was an eleven-year age gap between the youngest and oldest participant. Because of the retrospective nature of the study, this wide age range means the older participants were further removed from their youth soccer experiences. Regardless how distant each participant was from their days as a youth soccer player, all participants were working from memory to share their detailed accounts of the phenomenon.

The findings of this study have implications for potential changes in how concussion education is created and disseminated among different athlete populations. As previously discussed, the factors that influence concussion behaviors and return to play decision making are unique to each athlete population. Considering this, concussion education should be developed with each specific population in mind, as a male, high school hockey player will have a different mindset than a female elementary school soccer player. Therefore, the content and delivery of the concussion education materials should be suited for each specific population. While

concussion education is mandated, there is not a required format in which this education is delivered (Chrisman et al., 2014). The Lystedt Law drew awareness to the frequency and seriousness of concussion in sport, but there are no requirements for how concussions should be reported by the coaches to the players or parents (O'Kane et al., 2014). This lack of clear concussion education format and reporting guidelines indicates that creating a more defined education process tailored to specific populations should be considered.

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APPENDICES

APPENDIX A
INTERVIEW GUIDE

Construct/Topic	Question
Demographic/General Questions	-Please tell me about your experience playing soccer. -How long did you play soccer? -Where did you play?
Concussion Education	-Tell me what you remember about receiving formal concussion education. a. When did you receive this education? b. How many times did you receive this education? c. Was the educational content always the same? -How did the concussion education impact you as an athlete? -Were your coaches familiar with the signs and symptoms of concussion? a. How could you tell? -Please describe what you think your parents/guardians understood concussion symptoms and seriousness. -Please describe your understanding, at that time, of concussion symptoms and their seriousness. b. How did your parents/guardians' knowledge of concussion impact you?
Gender and Concussion	-Did being a female athlete (or playing on a girls' team) play a role in how concussions were treated when you were playing? a. Why or why not? -Please tell me about a time, if there was one, when you felt pressure to "tough it out" after receiving a concussion. a. Why did you feel pressure? b. Where did that pressure come from? c. How did that pressure influence your actions?
Return to Play	-How long did you wait before returning to play after your first concussion and why?

	-Please tell me about a time, if there was one, when your coach pressured you to return to play. a. How did this pressure impact your decision-making? -Did your parents/guardians pressure you to return to play? a. Why or why not? -Please describe your feelings about returning to play after your concussion. -Please describe any concussion recovery guidelines you were asked to follow. a. To what degree did you follow these guidelines? b. Did your coach and parents/guardians encourage you to follow these guidelines?
Attitudes	-How seriously would you say you took concussions prior to your first one and why? -Were you worried about sustaining a concussion prior to your first one? a. Why or why not? -Please describe your attitude towards concussion before sustaining a concussion. a. What informed this attitude? -How did your attitude toward concussion change after you sustained a concussion? -Please tell me about a time you remember your coach displaying a certain attitude toward concussion. a. How did your coaches' attitude toward concussion inform your attitude? b. How did it inform your team's attitude? -Please tell me about a time you remember your parents/guardians displaying a certain attitude toward concussion. a. How did their attitude impact you? -Did gender impact people's attitudes toward concussion? a. Why or why not?
Subjective and Group Norms	-Please tell me about a time when you felt pressure from someone to play through an injury. -Please describe an instance when you pressured yourself to play even though you might have had a concussion. a. Why did you put this pressure on yourself? -Tell me about a time when you watched one of your teammates face pressures to keep playing after possibly sustaining a concussion.

	a. What was the context of this instance? (ie. playoff game, end of season, etc.)
Social Support	-Please tell me about an instance when you felt supported by someone after sustaining a concussion. a. Why did you feel supported by them? b. How did this support impact your decision-making? -Please describe a time when you witnessed one of your teammates receive support after a head injury. -How did support about concussion influence you as a young athlete? -Do you think gender plays a role in support surrounding concussion? a. Why or why not?
Perceived Behavioral Control	-How much ownership do you think you had in determining when to return to play?
Self-identity	-How did your self-identity as a soccer player impact your decision to return to play? -How did your self-identity as a female athlete impact your decision to return to play?

APPENDIX B
DEMOGRAPHIC SCREENING QUESTIONNAIRE

Thank you for your interest in our research study! This is a quick screening form that should take about five minutes to complete. To be eligible for this study, you should: (a) identify as female, (b) have played on an organized girls' youth soccer team, (c) have played youth soccer after 2005 (d) have sustained one or more concussions while playing youth soccer, (e) have been under the age of 18 at the time of concussion, and (f) 18 years or older at the time of the interview. If you are selected to participate in this study, you will receive an email from the research team with a consent form to sign and return.

1. What is your name?
2. How old are you?
3. What is your gender identity?
4. What ages did you play youth soccer?
5. What year did you start playing soccer?
6. Please select all levels of soccer you played (you may select more than one): recreational league, high school soccer, club/private league, college, other.
7. How many concussions did you sustain while playing youth soccer?
8. Were your concussions diagnosed by a medical professional?
9. Please report the medical grade (1-3) of each of your concussions, if known.
10. Are you willing to complete a 60-minute interview?
11. To participate in this study, you must provide consent. Are you willing to complete an electronic consent document?

12. Please enter your preferred email address below:

APPENDIX C
RECRUITMENT EMAIL

Dear Participant,

Thank you for your participation in this study. Previously, you expressed interest in participating in our interview project. If you would still like to participate in an interview about concussions in youth female soccer, please respond to this email and include the following information:

1. If you are interested in participating in a digitally recorded telephone or Zoom interview lasting about 60 minutes.
2. Please include three 90-minute blocks of time (between 9am and 7pm Eastern time) that would be good times for you to talk during the next week. Please note that while the interview is expected to take about 60 minutes, the 90-minute block is to allow for issues connecting with each other, technology-related problems, and conversations that run longer than expected.
3. Please indicate whether you would prefer a phone or Zoom interview.
    a. If you selected phone, please provide your phone number.
    b. If you selected Zoom, please provide the email address we should send the Zoom meeting invitation to.

Once we receive your reply, we will email you to confirm our interview time. If you are no longer interested in participating, you can either disregard this email or reply to that effect.

If you have any questions, please email Emily.cort@uga.edu

Best,

Emily Cort
MS Student, Sport Pedagogy
Department of Kinesiology
Mary Frances Early College of Education
University of Georgia
330 River Road, Room 219
Athens, GA 30602

APPENDIX D
CONSENT FORM

UNIVERSITY OF GEORGIA
CONSENT FORM

A Qualitative Study on the Intentions of Youth Female Soccer Players' Return to Play Following a Concussion

Researcher's Statement

You are being asked to take part in a research study. To be eligible to participate in this study, you should: (a) identify as female, (b) have played on an organized youth soccer team, (c) have started playing youth soccer after 2005, (d) have sustained one or more concussions while playing youth soccer, (e) be 18 years of age or older at the time of data collection, (f) be willing and able to provide informed consent, and (g) be willing and able to complete one semi-structured interview.

Before you decide if you would like to participate in this study, it is important that you understand why the research is being done and what it will involve. This form is designed to give you the information about the study so you can decide whether you wish to be in the study or not. Please take the time to read the following information carefully. Please ask the researcher if there is anything that is not clear or if you need more information. When all your questions have been answered, you can decide if it's right for you to be in the study or not. A copy of this form will be given to you.

Principal Investigator: *Dr. Nicole Kirk*
Kinesiology Dept.
Tnk51820@uga.edu

Co-Investigator: *Emily Cort*
Kinesiology Dept.
Emily.cort@uga.edu

- The purpose of this study is to learn more about the lived experiences of former female youth soccer players' and the factors that influence decisions to return to play after sustaining a concussion.
- Participation in the study involves completing a semi-structured interview via video conferencing platform (e.g., Zoom) with a member of the research team. It is expected that the synchronous spoken interviews will last approximately 60 minutes. There is the potential for an approximately 30-minute follow-up interview, if necessary.
- There are no major risks associated with participation in this study.
- The primary benefit of participating in this study is to expand our knowledge base about concussion education and perceptions of concussion in female youth soccer. We hope this will lead to improved communication and understanding about concussions in female youth soccer and lead to further interventions to reduce concussion rates for this population.

Study procedures and time commitment

Once you are enrolled in the study, you will receive an email from a member of the research team. The email will ask you to arrange a time to complete your interview via Zoom (or similar). Then a link will be sent for you to join the scheduled meeting. If necessary, the researcher will contact you with any follow-up questions or items for clarification for you to respond to or to set up a brief follow-up interview via Zoom (or similar).

Risks and discomforts

- Psychological risks: There are some questions that might make you uncomfortable (like asking personal questions about concussion experiences that could be negative). You can skip any question that you do not wish to answer.
- Physical risks: There are no physical risks associated with this study.
- Harm due to loss of privacy: The study team will collect information about soccer playing history and some relevant demographic information about you. Though it is unlikely, this information may identify you. The researchers will ensure privacy using the methods described below under "Confidentiality of records"
- Harm due to loss of confidentiality: The study team will ensure confidentiality using the methods described below under "Confidentiality of records."

Benefits

While there are no direct benefits to you for participation, the information obtained in this study will also expand our knowledge base leading to beneficial changes in the future. The study team hopes to learn more about concussion experiences for youth female soccer players to improve communication and understanding about concussion rates in this population.

Token of Appreciation

- Participants who successfully complete all aspects of the study, including follow-up prompts, will receive a check in the amount of $15.00 as a token of appreciation.

Confidentiality of records

To protect against a loss of privacy, any direct identifiers in the information collected as part of the study will be removed during interview transcription. For example, your name will be replaced with a pseudonym and any names or geographical identifiers will be replaced with generic terms (e.g., "high school" instead of "Clarke Central High School"). Video and/or audio files of your interview, as well as any remaining information generated by the screening questionnaire will be destroyed following data collection. Any physical files will be kept in a locked file cabinet in the office of the lead researcher. All digital files will be kept in a password protected file on the lead researcher's office computer. Only the members of this study team will have access to these files. The study records may be reviewed by departments at the University of Georgia responsible for regulatory and research oversight.

De-identified data from this study may be shared in scholarly journal articles, with other researchers, and/or in future scholarly reports without additional consent. The study team will not release identifiable results of the study to anyone other than individuals working on the project without your written consent unless required by law.

This research involves the transmission of data over the Internet. Every reasonable effort has been taken to ensure the effective use of available technology; however, confidentiality during online communication cannot be guaranteed.

To process participant checks, certain identifying information, such as your name and email, and mailing address may be shared with the Kinesiology departmental business office at the University of Georgia.

Taking part is voluntary

Participation in this research study is voluntary. You can refuse to take part or stop taking part at any time without giving any reason without penalty or loss of benefits to which you are otherwise entitled. If you stop taking part in the study, the information that can be identified as yours will be kept as part of the study and may continue to be analyzed, unless you make a written request to remove, return, or destroy the information.

If you have questions

The main researcher conducting this study is Dr. Nicole Kirk at the University of Georgia. Please ask any questions you have now. If you have questions later, you may contact Dr. Nicole Kirk at *tnk51820@uga.edu*
or at (762) 499-2275. If you have any questions or concerns regarding your rights as a research participant in this study, you may contact the Institutional Review Board (IRB) Chairperson at (706)-542-3199 or irb@uga.edu.

Research subject's consent to participate in research

To voluntarily agree to take part in this study, you must sign on the line below. You may scan a copy of your signed document or sign electronically in place of a physical signature. Your signature below indicates that you have read or had read to you this entire consent form and have had all your questions answered. Your signature indicates that you consent to participate in this research project.

Name of Researcher	Signature	Date
Name of Participant	Signature	Date

Please keep one copy and return the signed copy to the researcher and retain a copy for your records.