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### **Parents' Intentions to Allow Youth Football Participation : Perceived Concussion Risk and an Augmented Theory of Planned Behavior**

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### **Abstract**

Youth football participation numbers have seen a decline in recent years, with many believing that the risk of head injury is to blame for the decrease. One step to reversing the decline in participation is to understand why fewer children are participating in football. Using an augmented version of the Theory of Planned Behavior, this study looked at the predictors of parents' intentions to allow their children to participate in football. It was hypothesized that in addition to attitudes, social norms, and behavioral control, perceived concussion risk would be a predictor of intention to allow football participation. An online survey was developed and taken by 491 parents of children age 18 and younger.

As hypothesized, there were four significant predictors of intention to allow football participation: attitude toward youth football participation, social norms, behavioral control, and perceived risk of concussion in football. The findings of this study provide a better understanding of parents' decision making when considering youth football participation. These results provide a theoretical platform for interventions to promote youth sport participation and to reverse the decline in football participation.

MONTCLAIR STATE UNIVERSITY

Parents' Intentions to Allow Youth Football Participation: Perceived Concussion

Risk and an Augmented Theory of Planned Behavior

by

Ashley Morgan Murphy

A Master's Thesis Submitted to the Faculty of

Montclair State University

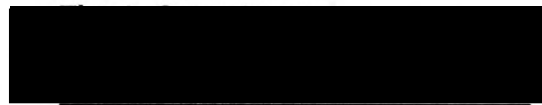
In Partial Fulfillment of the Requirements

For the Degree of Master of Arts

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PARENTS' INTENTIONS TO ALLOW YOUTH FOOTBALL PARTICIPATION:  
PERCEIVED CONCUSSION RISK AND AN AUGMENTED THEORY OF PLANNED  
BEHAVIOR

A THESIS

Submitted in partial fulfillment of the requirements

For the degree of Master of Arts in Psychology

by

Ashley Morgan Murphy

Montclair State University

Montclair, NJ

August 2016



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### **Acknowledgements**

I could not have done this on my own, and therefore must thank the people that have helped me finish this study. These few words are not enough.

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Youth football has seen a steep decline in participation numbers in recent years, a sharp contrast to years of previously consistent growth. USA Football, a national organization partially funded by the National Football League (NFL), reported a 6.7 percent decrease in youth participation (ages 6-14) for the 2011 season (Fainaru & Fainaru-Wada, 2013). Pop Warner, the largest youth football program in the United States, also saw a decline in participation at this time, off 9.5 percent between 2010 and 2012 (Fainaru & Fainaru-Wada, 2013). While there are several possible explanations, many people, including Dr. Julian Balies—chief medical officer of Pop Warner—credit parental concern over head injuries as the number one cause for the decline in participation (Fainaru & Fainaru-Wada, 2013).

Concussions, particularly those sustained while playing football, have been a topic of recent attention in academic literature (Gessel, Fields, Collins, Dick, & Comstock, 2007; Halstead, Walter, & The Council on Sports Medicine and Fitness, 2010; McCrory et al., 2013), as well as prominent mainstream media sources such as *Sports Illustrated* (Reiter, 2015), *People* (Dodd, 2016), and *The Wall Street Journal* (Laskas, 2015). Also in the public eye are the potential long-term effects of head trauma sustained while playing football, including the recent release of a major motion picture entitled *Concussion* (Scott et al., 2015). Starring Will Smith and Alec Baldwin, *Concussion* portrays the work of Dr. Bennet Omalu and his battle with the NFL over the potential long-term consequences of head trauma in football (Scott et al., 2015). Simultaneous to the increased awareness surrounding head trauma in football, concussion researchers continue to make advances in the prevention, recognition, evaluation, and management of the injury (Halstead et al., 2010). These

advances aim to protect both the athletes who play the game and the reputation of the game itself.

In an effort to prevent concussions and improve player safety, Pop Warner has implemented rule changes, including limiting contact in practice (Pop Warner National Office, 2012), and has partnered with USA Football's "Heads Up" program (Fainaru & Fainaru-Wada, 2013). "Heads Up" aims to minimize head contact through teaching proper tackling technique. In 2015, youth football saw an increase in participation among 6 to 14 year olds, as compared to the previous year. Though tackle football participation did increase 1.9 percent, it was flag football, a safer alternative to tackle, which showed the greater increase of 8.7 percent (Alic, 2016; Spies-Gains, 2016). Despite the one-year increase in participation, youth football numbers still remain lower than in 2010. Though the increase in flag football numbers is promising, USA Football is cautious about the minimal 1.9 percent increase in tackle football. It is too soon to tell if this increase is a trend, or just one year of gain amidst overall stagnation (Alic, 2016; Spies-Gans, 2016).

While there are indeed risks with playing sports, youth sport participation is beneficial to the physical, social, and psychological wellbeing of children and adolescents (Neely & Holt, 2014). In order for young athletes to continue to reap the benefits of football participation, we must understand why numbers are declining. A continued decrease in football participation could threaten the future of the sport, potentially excluding countless children from its benefits. Since much sport participation begins at a young age, parents have a strong role in deciding which sports their children will play. It is therefore important to examine which

factors are contributing to parents' decisions to allow football participation in order to understand, and work to reverse, the decline in participation. While anecdotal evidence does suggest some parents are not allowing their children to play football due to the risk of concussion, further research is required. Informed by past research, the current study develops and tests a model of parents' decisions to allow youth football participation. The model includes Theory of Planned Behavior antecedents and perception of concussion risk. An understanding of the factors that influence parents' decisions to allow football participation could provide a theoretical framework from which to create interventions to reverse declining football participation.

### **Head Trauma in Sports**

While head trauma can also refer to musculoskeletal injuries such as skull fractures and cuts or bruises to the scalp, brain injuries are more commonly in the public eye. Brain injury in sports can include a variety of injuries, including concussion, brain bleeds, Second Impact Syndrome, and Chronic Traumatic Encephalopathy (CTE). It is important to understand the differences in definition, severity, and prevalence of these brain injuries to understand the focus of this study—concussions.

Intracranial hemorrhage is bleeding that occurs inside the skull and is named based on anatomical location: subdural, epidural, intracerebral, or subarachnoid (Naidech, 2011). Subdural and epidural hematomas are usually caused by trauma, such as a blow to the head, which although rare, can occur from sport participation (Halstead et al., 2010; Naidech, 2011). Signs and symptoms that a brain bleed may



exist include severe headache, significant drowsiness, the inability to awaken from sleep, slurred speech, lack of orientation to time or place, unequal pupils, and progressive or sudden impairment of consciousness (Halstead et al., 2010; Prentice, 2011). Immediate medical treatment is required as the outcome of these injuries ranges from full recovery with no lasting impact to death (Mueller, 2001; Prentice, 2011).

Second Impact Syndrome (SIS) is a condition in which returning to physical activity before a brain injury has healed results in an often-fatal second impact to the head (Halstead et al., 2010; Cantu, 1998). The second hit can be relatively minor, or can even be to a part of the body away from the head that transmits the force to the brain (Prentice, 2011). This second hit leads to rapid swelling within the brain, increased pressure, and then herniation (Prentice, 2011). The athlete may initially appear normal, but within seconds to a few minutes, rapidly deteriorates to a life-threatening state (Prentice, 2011). SIS is most common in younger athletes less than twenty years old, whose brains are still developing (Halstead et al., 2010; McCrory, Davis, & Makkissi, 2012; Prentice, 2011). While SIS is a rare condition, it is important to avoid returning to participation too soon after a head injury in order to prevent a second impact (Prentice, 2011).

CTE is a progressive neurodegenerative disease that is caused by a buildup of Tau protein in the brain (Asplund & Best, 2015; Omalu, 2005). It was first described in an NFL player in 2005 (Omalu, 2005). Whereas it can only be diagnosed at autopsy, it has been associated with memory problems, depression, anger, increased impulsivity, apathy, and impaired motor behaviors (Asplund & Best, 2015; Gavett,



Stern, & McKee, 2011; McKee et al., 2009). Though it is the popular misconception of many parents due to media reports, it is important to note that CTE has not been empirically linked to concussion (McCrory et al., 2013). Therefore, it should be emphasized that concussion and CTE are not the same thing, though both are potential risks of sport participation.

### **Concussion in Sports**

It is the risk of concussion—not other, less frequent head trauma—which is the focus of this study. There are between 1.6 and 3.8 million reported and unreported sport- and recreation-related concussions each year in the United States. (Langlois, Rutland-Brown, & Wald, 2006). Among children age 5-18, the most common activities causing concussion are bicycling, football, playground activities, basketball, and soccer (Centers for Diseases Control and Prevention [CDC], 2011). Concussions comprise as high as 8.9% of all high school injuries sustained during participation in contact sports (Gessel et al., 2007). Pediatric sports-related concussions account for 58% of all ER visits in children aged 8-13 and 46% of all visits in those aged 14-19 (Broglia, Macciocchi, & Ferrara, 2014).

In the consensus statement following the Fourth International Conference on Concussion in Sport, McCrory et al. (2013) presented a long and multifaceted definition of concussion. For the purpose of this study, a concussion is summarized as “an injury caused by a blow to the head or sudden movement of the body followed by a variety of signs and symptoms that may include any of the following: headache, dizziness, loss of balance, blurred vision, ‘seeing stars,’ feeling in a fog or slowed down, memory problems, poor concentration, nausea, or throwing up.”

(Register-Mihalik et al., 2013). One does not need to lose consciousness in order to sustain a concussion, and in studies of high school concussions, loss of consciousness has been reported to occur in only 4.9-10% of concussions (Collins et al., 2003; Meehan, d'Hemecourt, & Comstock, 2010).

In addition to the symptoms previously listed, the injury can lead to long-term cognitive deficits (Halstead et al., 2010), prolonged symptoms leading to Post Concussion Syndrome, (Halstead et al., 2010), social and emotional changes (Trahan, Ross, & Trahan, 2001), early retirement from sport (Halstead et al., 2010), and academic struggles (Ransom et al., 2015). While a concussion is a brain injury and should be treated as such, long-lasting effects of concussions present in only a small subset of concussion patients (McCrorry et al., 2013). Prolonged recovery is more likely in athletes who delay seeking appropriate care, often because they attempt to play through the symptoms (Asken et al., 2016). If properly treated, most people who sustain a concussion fully recover within 7-10 days after injury, though children's brains may take longer to heal (McCrorry et al., 2013).

In order to protect athletes of all sports from the dangers of playing with concussions, governmental and sport organizations across the country have made significant changes regarding player safety. These changes affect a wide range of sports and include mandatory concussion training for athletes and coaches, new safety rules, a summit on youth sport and concussion held by President Barack Obama, and legislation mandating concussion education in all 50 states (Adler & Herring, 2011; Caron, Bloom, Falcão, & Sweet, 2015; Chrisman, Quitiquit, & Rivara, 2013; Pop Warner National Office, 2012; Smith, 2015a). Within the game of football,

Pop Warner and the NFL have also made rule changes, including limiting contact in practice and requiring Certified Athletic Trainers as injury “spotters” who have the power to stop an NFL game if concussion is suspected on the field (Klein, 2015; Pop Warner National Office, 2012; Smith, 2015a).

Despite the numerous changes to enhance concussion safety in football, Dr. Omalu recently called for a ban on football for those under 18 years old, similar to the laws in place to protect minors from the dangers of alcohol and tobacco. (Dodd, 2016; Omalu, 2015). However, not all leading experts in the field support the call to ban football for minors. One such expert, Dr. Julian Bailes, has stated that he believes the benefits of football outweigh the risks, which is why he advocates continued improvements to player safety, but also allows his sons to play football despite his research into brain injury with Dr. Omalu (Smith, 2015b; Fainaru & Fainaru-Wada, 2013).

While many other sports and activities cause concussion, football has gained the lion's share of the concussion attention in the United States. The rise in public concern regarding the risks of concussions in football may be contributing to the decrease in youth football participation. For fear of concussion, parents may be looking for safer alternatives or deciding not to allow football participation. However, this is currently speculation, as we do not have an empirically supported theory of how parents make football-related decisions for their children, nor do we have, to our knowledge, a study empirically linking parents' perceptions of concussion risk and their decisions to let their children play football.

### **Theory of Planned Behavior**

Ajzen developed the TPB in 1985 as a revision to the Theory of Reasoned Action (TRA) he had previously worked on with Fishbein (Ajzen, 2012). Central to the TPB are the constructs of attitudes, social norms, and behavioral control (Ajzen, 2012). Attitude toward a behavior is direct result of the subject's beliefs about the behavior's likely or probable consequences. For example, parents may believe that if their children participate in youth football they are likely to make new friends, develop character and teamwork, and increase their level of health and fitness. Other parents may see the likely outcomes of football participation to be injury, increased competitiveness and aggression, or less time to focus on schoolwork. These beliefs concerning the outcome of playing youth football form parents' attitudes toward participation. Depending on the beliefs they hold, parents may have favorable or unfavorable attitudes toward youth football participation.

According to the TPB, a second predictor of intention is the subjective norm. Subjective norms are established by the beliefs about the expectations of important others. These important others may be family, friends, the media, their community, or any other opinions the parent values. As a parent, do those around you expect you to allow your children to play football? Do they expect you to disallow participation in football? The expectations of those whose opinions a parent values shapes their subjective norms, or what is perceived to be "normal."

Finally, perceived behavioral control is a measure of the subject's belief about the presence of factors that control behavioral performance. In other words, does the parent have control over whether or not their child participates in football,

or are there other people or outside factors that have some degree of control? As parental consent is often required for sport participation, a parent may feel they have full control over whether or not their child plays football. However, some parents may feel they have less control in the presence of variables such as not having the money for registration fees, no availability of a team in the area, or a child being able to go behind their back to play (such as in the case of forging a signature or if the child lives with their other parent). The presence of these factors and others may contribute to a parent's perceived behavioral control over whether or not their child participates in football.

In the TPB model, intentions are a direct product of a person's attitude towards the behavior in question, their perceived subjective norm, and their perceived behavior control. Intentions, in turn, are the immediate precursors of the behavior. That is, according to this model, if a person intends to carry out a behavior, he or she will indeed carry out the behavior. Generally speaking, more favorable attitudes and subjective norms, combined with greater perception of behavioral control, result in a stronger intention to perform a given behavior. The opposite is also true in that less favorable attitudes and subjective norms, combined with a lower perception of behavioral control, result in a weaker intention to perform a given behavior. Research shows that in the presence of actual behavioral control, intentions are a strong predictor of behavior (Ajzen, 2012). Therefore, the TPB allows us to look at probable future behaviors through studying intentions, such as the intention of a parent to allow youth football participation.



### **Prior Use of Theory of Planned Behavior**

Since its development in the 1980s, the TPB has become a popular model for understanding and predicting the psychological antecedents of behavior (Ajzen, 2012). This well-established model has recently been used to examine cyberbullying (Pabian & Vandebosch, 2014), binge drinking (French & Cooke, 2012), parent attitude toward corporal punishment (Taylor, Hamvas, Rice, Newman, & DeJong, 2011), personal computer use at work (Askew et al., 2014), and beverage choice of adolescents and their parents (Riebl et al., 2015). In addition to predicting behavior, the TPB has been used as a foundation for designing, implementing, and evaluating a variety of interventions. Interventions based on the TPB have successfully been used to increase sun-protective behaviors (White et al., 2015), increase compliance with speed limits (Elliott & Armitage, 2009), increase fruit and vegetable consumption (Gratton, Povey, & Clark-Carter, 2007), and lower Body Mass Index and blood pressure in children (Angelopoulos, Milionis, Grammatikaki, Moschonis, & Manios, 2009). In addition to the wide range of topics just mentioned, the TPB has also been previously used to study concussion.

Within the domain of concussion, the TPB has been used to explain Athletic Trainers' beliefs concerning concussion management (Rigby, Vela, & Housman, 2013), to evaluate the effectiveness of concussion education in getting athletes to report concussive symptoms (Kroshus, Baugh, Daneshvar, & Viswanath, 2014a; Kroshus, Daneshvar, Baugh, Nowinski, & Cantu, 2014b; Kroshus, Baugh, Daneshvar, Nowinski, & Cantu, 2015), and to study athlete knowledge in regards to attitudes toward concussion (Register-Mahlik et al., 2013). A study by Register-Mahlik et al.

(2013) was the first to use the TPB to study concussion reporting. The study showed that attitude towards concussion reporting, subjective norms, and perceived behavioral control accounted for 53% of the variance in participants' intentions to report concussions. However, it also showed that intentions may or may not predict behavior in this area. The researchers cited a possible explanation to be that the decision to report a concussion is often made unexpectedly in the heat of competition.

### **Current Study**

With the goal of gaining a better understanding of declining football participation, this study examines the variables that influence parents' intentions to allow their children to participate in football. Since the TPB has explained intentions in other similar areas of study, including areas related to concussion, it is reasonable to think that the TPB could also be successful in examining the intentions of parents toward allowing youth football participation. We anticipate that parents' decisions to allow football participation are being influenced by attitudes, social norms, and behavioral control. Following the perceived link between concussion risk and declining football participation, we also believe that concussion risk in football will be an additional antecedent of parents' intentions. As such, this study will use an augmented model of the Theory of Plan Behavior that is more specific to football.

In our augmented TPB model, it is hypothesized that four factors contribute to parents' intentions allow football participation: perceptions of concussion risk in the sport, attitudes towards youth football participation, social norms of allowing

the child to play, and perceived behavioral control over participation in football. A graphical depiction of this model can be seen in Figure 1. Following the general rule of the TPB, attitudes toward youth football, social norms, behavioral control, and perception of concussion risk will be positively correlated to intention to allow football participation. Since parents are not forced to make the decision to allow participation while in the heat of competition, but rather under normal, non-competitive conditions, we expect intentions to lead to behavior. As opposed to measuring actual behavior, this study will measure intentions, which research shows are strongly linked to actual behavior (Ajzen, 2012). Measuring intentions eliminates some of the logistical restrictions of measuring actual behaviors and will provide a larger sample size with enough power to test our model.

To test generalizability to other sports, this model will also be used to examine the same hypothesis with regards to soccer. While soccer is often seen as a safer option to football in terms of concussion risk, it is actually among the riskiest—with high rates of concussion, research supporting potential long-term brain changes from head contact, and recent rule changes in regards to increased brain safety (Gesell et al., 2007; Cantu, 2012; U.S. Soccer, 2015; Lipton et al., 2013). As seen in Figure 2, it is predicted that the same four variables—attitudes, social norms, behavioral control, and perceived concussion risk—will predict parents' intentions to allow youth soccer participation.

### **Exploratory Study**

Considering the anecdotal evidence and prevalence of concussion in football in the media, it was also hypothesized that parents would show greater intentions to



allow their child to play soccer than to play football. This hypothesis assumes that parents view concussion safety as important and their intentions would be shaped by the greater actual risk and less favorable media portrayal of concussion in football. For the same reasons, it was predicted that parents would have a less favorable view of concussion in football than in soccer, despite high rates of concussion in each. Finally, what factors affect parents' general attitudes towards concussion? In exploratory study, it was hypothesized that perception of concussion knowledge, actual knowledge of concussion, and concussion experience/exposure influence general attitudes toward concussion. If these factors do influence parental attitude toward concussion, increasing knowledge through concussion education could help create more positive attitudes toward concussion in youth sports.

## Methods

### Participants

A total of 685 participants were recruited. Those who did not have at least one child age 18 or younger, did not complete the survey at least as far as the concussion knowledge assessment, took longer than 60 minutes to complete the survey, or obtained a Validity Score of less than 2 were excluded from analyses. The included participants ( $n = 491$ ) had an age range of 25 to 69 years old ( $M = 43.53$ ,  $SD = 7.16$ ). As seen in Table 1, participants included more females than males, were predominately White, and most held a Bachelor's or Graduate degree. On average, each participant reported having 2.22 children age 18 or younger ( $SD = 0.87$ ), with approximately the same number of male children (53.92%) as female children

(46.08%). Information concerning sport involvement, medical or coaching certifications, and concussion exposure was collected. The responses relating to these demographics can be found in Appendix A.

### **Measures**

The survey can be viewed in its entirety in Appendix B.

**Demographic information.** Demographic information collected included gender, age, race, and highest completed level of education. We also collected pertinent demographic information such as previous organized sports in which the parent has participated, sports coached currently or in the past, and coaching or medical certifications held. Demographic information about the participants' children was collected for exploratory purposes, including ages, genders, and sports in which the children have participated.

**Intentions to allow sport participation.** Questions regarding intention to allow football and soccer participation were developed using the guidelines set forth by Ajzen (2002) in his seminal article on how to create scales for TPB constructs. To minimize the influence of extraneous variables that would be influential if parents referenced their own children, questions were framed in regard to their hypothetical son, "Steve"—an 8-year old boy who does not currently play either football or soccer. Using a hypothetical child eliminates "noise" from the data that could result from parents having children of different ages, genders, interests, etc., allowing more powerful rest of our hypotheses. The use of hypothetical scenarios like the one here is common in social psychology literature (Cheung & Heine, 2015; Chrisman et al., 2013; Habashi, Graziano, & Hoover, 2016;

Hepper, Hart, & Sedikides, 2014; Kanten & Teigen, 2015). Questions asking about intentions followed a 5-point bipolar response format and included items such as "I would be likely to sign Steve up for football" and "I would not let Steve play soccer." There were 3 identical items for each the football and soccer constructs, with the only difference being the name of the sport. Both the football ( $\alpha = .90$ ) and soccer ( $\alpha = .86$ ) scales showed high reliability.

**Behavioral control.** Ajzen's guidelines (2002) were again used for the creation of the football and soccer behavioral control scales. Each scale consisted of 3 similarly worded items. Participants were asked about their perception of their control over whether or not Steve plays each sport, using a 5-point Likert-style format with a scale of Strongly Disagree to Strongly Agree. Questions included "I have control over whether or not Steve plays soccer" and "Steve would be able to play football without my knowing." Both the football ( $\alpha = .41$ ) and soccer ( $\alpha = .35$ ) scales showed low reliability.

**Social norms.** Questions asked participants about the people whose opinions they may value when making parenting decisions, again using Ajzen's guidelines (2002). The valued others selected were the same 5 people groups for both the football and soccer items. These included family, friends, spouse (or Steve's other parent), other parents, and members of the community. There were 5 items on each scale formatted as 5-point Likert-style questions on a scale of Strongly Disagree to Strongly Agree. The items asked participants whether each social group would approve of Steve's participation in each sport (ie: "My family would not

approve of Steve playing football.”). Both the football ( $\alpha = .88$ ) and soccer ( $\alpha = .93$ ) scales demonstrated high reliability.

**Attitudes toward youth sport participation.** Participants were asked to rate their attitudes toward participation in youth soccer and toward participation in youth football. These questions used a 5-point bipolar scale with pairs of opposite adjectives on each pole, as modeled in Ajzen's guidelines (2002). The adjective pairs were the same for both football and soccer. Five adjective pairs were chosen. These pairs were “good/bad,” “harmful/ beneficial,” “safe/unsafe,” “positive/negative,” and “valuable/worthless.” Both the football ( $\alpha = .91$ ) and soccer ( $\alpha = .86$ ) scales demonstrated high reliability.

**Perception of concussion risk.** We were unable to find a validated measure of perception of concussion risk, so we developed the scales for this study. The soccer and football scales each consisted of 4 similarly worded items. Items were 5-point Likert-style questions on a scale of Strongly Disagree to Strongly Agree. Questions about concussion risk again referred to Imaginary Son Steve. Items asked about short-term risk (ie: “If Steve were to play football, he would probably get a concussion this upcoming season”) and long-term risk (ie: “Steve would not get a concussion if he played soccer through high school.”) There was also a question pertaining to general risk in each sport (“Soccer/football has a high risk of concussion.”). Lower scores represent a less favorable perception of concussion risk. A less favorable risk is defined as seeing greater risk of concussion in the sport, where playing would likely result in concussion. Higher scores represent a more favorable perception of concussion in the sport, defined in this study as seeing less

risk of concussion in the sport, where playing would not likely result in concussion. Both the football ( $\alpha = .83$ ) and soccer ( $\alpha = .75$ ) scales showed acceptable levels of reliability.

**Exploratory questions.** The questions to be used in exploratory analyses addressed the participants' perceptions of their own concussion knowledge, their actual knowledge of concussion, their concussion experience or exposure, their general attitude toward concussion, and their actual children's involvement in football and soccer. Questions used 5-point Likert-style questions on a scale of Strongly Disagree to Strongly Agree to assess the participants' perception of their own concussion knowledge (4 questions) and their general attitude toward concussion (6 questions). The perception of concussion risk scale showed high reliability ( $\alpha = .86$ ) while the general attitude toward concussion scale did not show acceptable reliability ( $\alpha = .55$ ). Concussion experience/exposure was determined through 4 questions that asked about previous concussion education, recognition of concussion media topics, and whether or not they or their children had experienced concussion. A concussion experience/exposure score was created, with 1 point given for each item recognized or experienced, and a maximum score of 15.

In order to establish their actual level of concussion knowledge, participants were given a concussion knowledge test. The questions for the knowledge test were taken directly from the Rosenbaum Concussion Knowledge and Attitudes Survey—Student Version (RoCKAS-ST). Though the RoCKAS-ST was designed for students, questions were not modified since the knowledge section of the RoCKAS-ST was not specific to students. RoCKAS-ST has been shown to be fairly valid and reliable in the



population of high school athletes when assessing concussion knowledge (Rosenbaum & Arnett, 2010). It has additionally been used to show a significant difference in concussion knowledge after a concussion education intervention in high school football players (Manasse-Cohick & Shapley, 2014). Correct answers were summated to create a Concussion Knowledge Index (CKI), as detailed by Rosenbaum and Arnett. The maximum score on the CKI was 25.

Participants were asked 4 yes/no questions to determine if their children do play football and/or soccer currently (in the upcoming season) or have played in the past but have since stopped playing. After each yes/no question, free-response questions asked the participants to list reasons why they do or do not play. Information collected in this section was used to further explore whether or not concussion is one of the factors considered for those who don't play football, or if there are other salient factors.

### **Procedure**

The Internet was used to recruit parents through schools and sport organizations across the United States. Contact information for school principals, superintendents, and heads of youth sports organizations was obtained through public email lists on their websites. An initial email was sent to the organization describing the purpose of the study in order to determine if the organization would be willing to help identify parents who would like to participate. If the organization agreed to participation, school or organization personnel forwarded the survey link to their organizations' parents through whatever means was easiest for the organization. Examples of distributing methods included posting on the

organization's website, Facebook account, Twitter account, etc.; adding it to "e-blasts" and newsletters sent to parents; posting in online parent flyer folders; utilizing parent email databases; and distributing through organized parent groups such as PTA, PTO, or boosters.

Participants accessed the survey via the Internet and completed it online. It began with an online informed consent, followed by the measure we created. Consent was required in order to continue and was given by all participants. Upon completion, participants were asked to submit contact information if they would like to be a part of future studies. This information was not used in the current study, but will be kept in a separate and secure file for potential future use. Finally, participants were thanked and again given the email addresses to contact the researchers with any questions. The participants were also presented with a link to the Heads Up! Concussion program ([www.CDC.gov/HeadsUp](http://www.CDC.gov/HeadsUp)), an educational effort established by the CDC, in order to obtain factual information regarding concussions in minors.

## **Results**

### **Descriptive Statistics**

Reliabilities and bivariate correlations are shown in Table 2. Scales generally showed acceptable to very good reliability, with the exception of the behavioral control scales, which were very poor ( $\alpha_{\text{football}} = .41$ ;  $\alpha_{\text{soccer}} = .35$ ). The football intentions scale showed considerably more variability than the soccer intentions scale (see Figure 3). An examination of the distributions suggests that almost all

parents were accepting of their children's desire to play soccer, whereas many parents had at least some resistance to their children playing football.

Perception of concussion risk, social norms, and attitude towards football each correlated significantly with intent to allow football participation. Behavioral control was not significantly correlated with intent to allow football participation, likely due to the poor variability and low reliability of the scale. In the soccer model, all four antecedents in the augmented TPB model showed a correlation with intentions to allow soccer participation. Social norms and attitude toward soccer were each moderately correlated with intent, while behavioral control and concussion risk were only weakly correlated.

### **Analyses**

The proposed model posits that social norms, behavioral control, attitudes, and perception of concussion risk influence parental intent to allow football participation. The results of this analysis are shown in Figure 4. Consistent with the model, a linear regression analysis revealed that all four predictors were significant ( $\beta_{\text{FBattitude}} = .48, p < .001$ ;  $\beta_{\text{FBnorms}} = .28, p < .001$ ;  $\beta_{\text{FBcontrol}} = -.08, p = .011$ ;  $\beta_{\text{FBrisk}} = .15, p < .001$ ) and accounted for over half the variance in intention to allow football participation ( $R^2 = .55$ ). Thus, the proposed model was supported for football.

Next, we examined the generalizability of the football model by testing an analogous model of parental intent to allow soccer participation. The results of this analysis are shown in Figure 5. Contrary to our hypothesis, behavioral control ( $\beta = .02, p = .61$ ) and perceived risk of concussion in soccer ( $\beta = .02, p = .66$ ) did not significantly predict soccer intentions in the model. Social norms ( $\beta = .27, p < .001$ )



and attitude towards soccer ( $\beta = .47, p < .001$ ) were significant predictors of intent to allow soccer participation. The results suggest that the proposed model might be an accurate theory of how parents make decisions regarding football participation, but that the theory might not generalize to sports that are perceived to be less risky in regard to concussion.

### **Exploratory Analyses**

Paired-samples t-tests were used to analyze the differences in perception of concussion risk in football versus soccer, as well as in intentions to allow football participation versus soccer participation. There was a significant difference in the soccer ( $M = 2.87, SD = .65$ ) and football ( $M = 2.25, SD = .69$ ) concussion risk scores,  $t(489) = -18.01, p < .001$ . These results suggest that participants had a less favorable perception of concussion risk in football than of the risk in soccer. There was also a significant difference in the scores for intention to allow soccer participation ( $M = 4.56, SD = .82$ ) and intent to allow football participation ( $M = 3.41, SD = 1.35$ ),  $t(489) = -17.19, p < .001$ . These results suggest that participants are more likely to allow their child to participate in soccer than in football.

Three predictors of general attitude toward concussion were hypothesized: perceived concussion knowledge, actual concussion knowledge, and concussion experience/exposure. A linear regression analysis revealed the hypothesized model did not accurately predict attitude toward concussion ( $R^2 < .01$ ) and that perception of concussion knowledge ( $\beta = .01, p = .786$ ), Concussion Knowledge Index ( $\beta = .06, p = .20$ ) and concussion experience ( $\beta = .03, p = .61$ ) were not significant predictors of concussion attitudes.

### Discussion

Sports, including football, have numerous physical, social, and psychological benefits to children and adolescents. Despite these benefits, there has been a recent decline in football participation. Closer examination of the predictors of parents' intentions to allow their children to play football can lead to a better understanding of participation numbers. Specifically, understanding the predictors of parents' intentions can help explain the recent decline in football participation. Following concern over concussion risks, football organizations have made concussion safety a focus to promote continued participation in the game. It is therefore beneficial to understand whether this risk is a contributing factor to parents' intentions. As football numbers decline, reportedly over concussion risk, two things can be done to promote youth football. First, football can continue to get safer. Those within football organizations and the medical community have been making improvements in this area. Second, we can understand what is influencing parents' decisions to allow football participation. Understanding parents' intentions to allow participation can lead to interventions that promote continued participation in youth football.

Using an augmented version of the TPB model to analyze the survey results, we were able to determine four predictors of parents' intentions to allow their children to play football. As hypothesized, the factors were perceived risk of concussion, social norms, behavioral control, and attitude toward youth football participation. These four factors accounted for an encouraging 55 percent of the variance in parents' decision making. The findings also support the initial

hypothesis that perceived risk of concussion is a significant predictor of parents' intentions to allow football participation.

### **Exploratory Analyses**

Through exploratory analysis, we were able to confirm that perception of concussion risk was less favorable in football than in soccer. We were also able to confirm the hypothesis that parents would have lower intentions to allow football participation as compared to soccer participation. One explanation of very positive attitudes toward soccer is that through playing, coaching, or having children who play, a higher percentage of participants had soccer exposure than football exposure. Though the items used Imaginary Son Steve to limit bias, it is possible that the higher exposure to soccer still influenced the attitudes, social norms, and intentions surrounding soccer.

The difference in concussion risk perception could potentially be attributed to the participants' exposure to negative media reports of concussion in football. Interestingly, approximately 40% had no previous concussion education, but nearly two-thirds had heard about the long-term effects of concussion. Despite high rates of concussion in both sports, nearly 75% of participants had heard reports linking concussion to football, while only 45% had heard reports linking concussion to soccer. Additionally, almost half the participants had heard about the NFL concussion lawsuits and the football movie *Concussion*. Approximately one-third had also heard about CTE, a debilitating disease linked in the media primarily to prolonged football participation. Though, as previously mentioned, CTE has not been linked to concussion, many parents are under this misconception. With so

much of the participants' knowledge concerning concussion coming from media sources, there is a possible bias against concussion risk in football.

The final exploratory hypothesis predicated that concussion experience/exposure, perception of concussion knowledge, and actual concussion knowledge would be predictors of general attitude toward concussion. However, this predication was not supported by the data, and none of the anticipated predictors had a significant effect on attitude toward concussion. The first possible reason is that the general attitude (DV) scale demonstrated poor internal consistency. Future studies should look to develop and pilot a more reliable scale. Additionally, it is possible that even with reliable scales, these variables do not predict attitudes toward concussion. Among others, Manasse-Cohick and Shapley (2014) found that concussion education resulted in significant changes in concussion knowledge scores, but not in concussion attitude scores. Caron et al., also (2015) discussed the need for programs that focus on knowledge translation as well as a focus on attitude toward concussion. Though researchers continue to try to find what influences concussion attitudes, the predictors have yet to be found.

### **Contributions**

This study makes three important contributions. First, this study was able to identify possible causes of parents' intentions to allow football participation. To our knowledge, no study had previously examined parents' decision-making in regards to youth sport participation; therefore, this study fills an important gap in the literature. Through augmenting the TPB model to include the perceived risk of

concussion as an antecedent, we were able to create a sport-specific model for predicting parents' intentions to allow football participation.

Secondly, while parents' concern over the risk of concussions has been anecdotally attributed as a cause of the decline of football participation, this study provides empirical support that this might indeed be the case. While intuitive, it is important to empirically test this relationship, rather than to assume or to rely on anecdotes. This finding also supports the current efforts to decrease concussion risk in football and provides an additional reason for continued safety reform within the sport.

Finally, this study provides the basis for interventions to change the intentions of parents to allow youth football participation. Behavioral control scores were very high, which can be attributed to the fact that parents generally have a great degree of control over whether or not their children play sports. Therefore, focusing on increasing attitudes toward football, the risk of concussion in football, and social norms show the most room for improvement. Perception of concussion risk could be a good first area of focus for interventions. Increased concussion education is required in order to correct the misperception of concussion among parents. As previously discussed, more parents had concussion exposure from the media than had formal concussion education. This can lead to a misrepresentation of concussion in sports, especially with the media focus on football in regards to head trauma. The prevalence of misinformation is supported by the results of a recent Harris Poll, which confirmed that American adults have a misperception of concussions (University of Pittsburg Medical Center, 2015).



Members of the medical community should continue to deliver factual education concerning concussion and clarify media coverage. Proper education can help clear up misconceptions regarding concussions and lead to a more favorable perception of concussion in football as well as increased intention to allow participation. Increased intentions should translate into reversing the decline in youth football participation.

### **Limitations and Future Directions**

The current study had a few limitations that should be acknowledged. First, as previously mentioned, there were some psychometric issues with some of the scales. To be specific, the behavioral control scales had extremely low reliability and the scale for intention to allow soccer participation had little variability due to a ceiling effect (all parents were highly agreeable to their children playing soccer). The general effect of these psychometric issues was that it made it more difficult to detect significant relationships between behavioral control scales and other variables, and between soccer intentions and other variables. As a consequence, the results of the soccer analyses are somewhat ambiguous. In the soccer analysis, it is unclear whether the predictors of behavioral control and perception of concussion risk were non-significant because they are unrelated to soccer intentions or if the psychometric issues attenuated the observed relationships below significance. Future studies should use an improved behavioral control scale to avoid these issues.

A second limitation is that the model did not fully generalize to the sport of soccer. This raises the question of whether the model is specific to how parents

make participation decisions only in regards to football, but not to other sports. For example, it is possible, that concussion risk is a factor unique to football decisions. It is also possible that the model does generalize to other sports with a high perceived risk of concussion, but does not generalize to sports that are perceived to be low-concussion risk, like soccer. Future research should look at the model in reference to parents' decisions to allow their child to participate in other sports with high concussion risk, such as ice hockey, rugby and lacrosse. Showing generalizability to other sports would be beneficial as other organizations look to encourage participation in their sports.

Another limitation is the use of a hypothetical child instead of the participants' actual children. It is possible that different psychological processes are involved when making decisions about a hypothetical child than are used when making decisions about one's actual child. While this is possible, hypothetical scenarios are established as a method for controlling confounds and isolating effects (Cheung & Heine, 2015; Chrisman et al., 2013; Habashi et al., 2016; Hepper et al., 2014; Kanten & Teigen, 2015). Additionally, it is unlikely we would find incremental validity of the predictors if we were probing a nonsensical phenomenon. Nonetheless, future study should extend these findings by testing the model with parents' actual children in regards to football participation.

Since this study used cross-sectional data, it is not possible to determine causation. However, the fact that previous studies have shown the TPB antecedents to change intentions and the fact that many TPB interventions are effective provide some circumstantial evidence for causation in this study. Nonetheless, future

studies should aim to provide a stronger case for causation. Interventions that successfully increase football participation by targeting specific antecedents in our augmented TPB model would provide moderate to strong evidence, depending on the study design.

Finally, the study did not measure parents' actual behaviors, but rather their intentions to carry out a behavior. This presents a limitation in assuming that intent to allow football participation leads to actual football participation. However, since previous studies have shown that intention leads to behavior, it is assumed that it does in this case as well. Future studies should confirm this. One suggestion for future study would be using only participants with children of the age and desire to play youth football, comparing intentions to allow participation in the upcoming season to the behavior actual registration when the season comes.

### **Summary and Conclusion**

Despite its many benefits, youth football participation numbers have seen a recent decline. By not participating in youth football, a growing number of youth are missing out on the physical, psychological, and social benefits of the sport. This study aimed to better understand why football participation is decreasing. Understanding the reasons behind the decline in football numbers is essential to reversing the trend. The goals of this study were to understand parents' intentions and to create a theoretical platform for future interventions that can promote youth football participation. Using an augmented TPB model, we were able to accomplish these goals. We found that four factors predict a parent's intention to let his or her child play football: social norms, attitude toward youth football participation,



behavioral control, and the perceived risk of concussion. The findings of this study provide a promising theoretical platform for new interventions that can promote continued youth football participation.

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Table 1

*Participant Characteristics: Gender, Race, and Education*

Factor	Frequency	Percent of Total
Gender (n = 489)		
Male	130	26.5
Female	359	73.1
Race (n = 489)		
Alaska Native or Native American	2	0.4
Asian	3	0.6
Black or African American	5	1
Hispanic or Latino/a	6	1.2
Hawaii Native or Other Pacific Islander	1	0.2
White	463	94.3
Multiple Selected	9	1.8
Education (n = 496)		
High School / GED	28	5.7
Some College	64	13
2-year Degree	60	12.2
4-year Degree	187	38.1
Graduate Degree	151	30.8

*Note.* Percentages do not total 100 because 2 participants did not respond to gender, 2 did not respond to race, 1 did not give education response; those reporting more than 1 race are listed here as "Multiple Selected" and not included in the individual race totals; Education refers to highest level of education completed

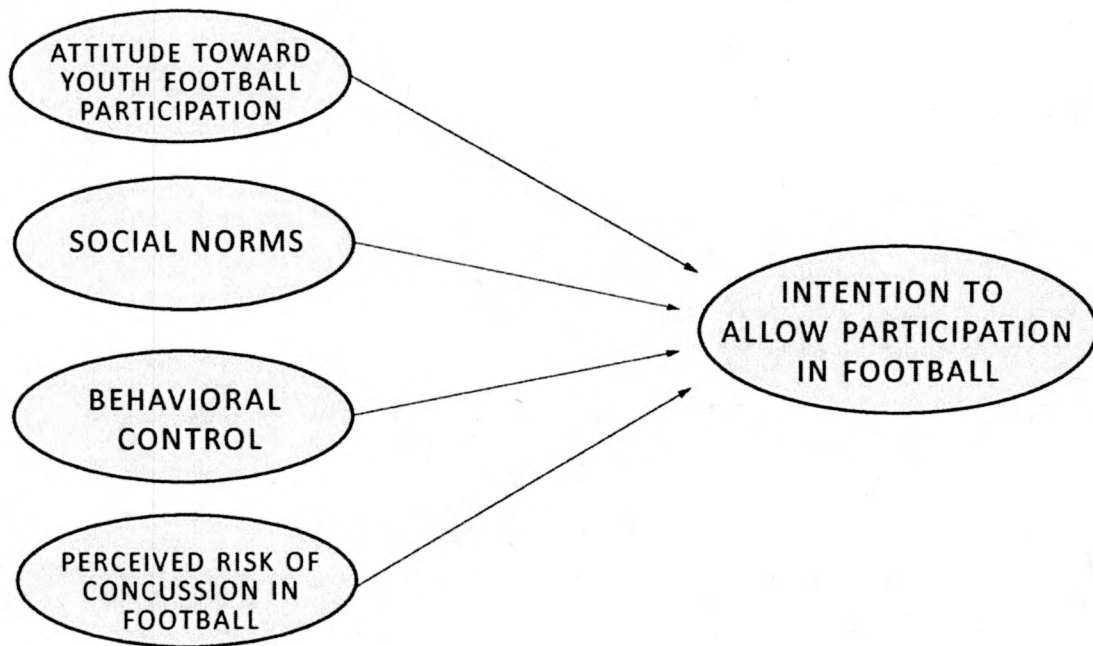
Table 2

*Descriptive statistics, correlations, and reliabilities*

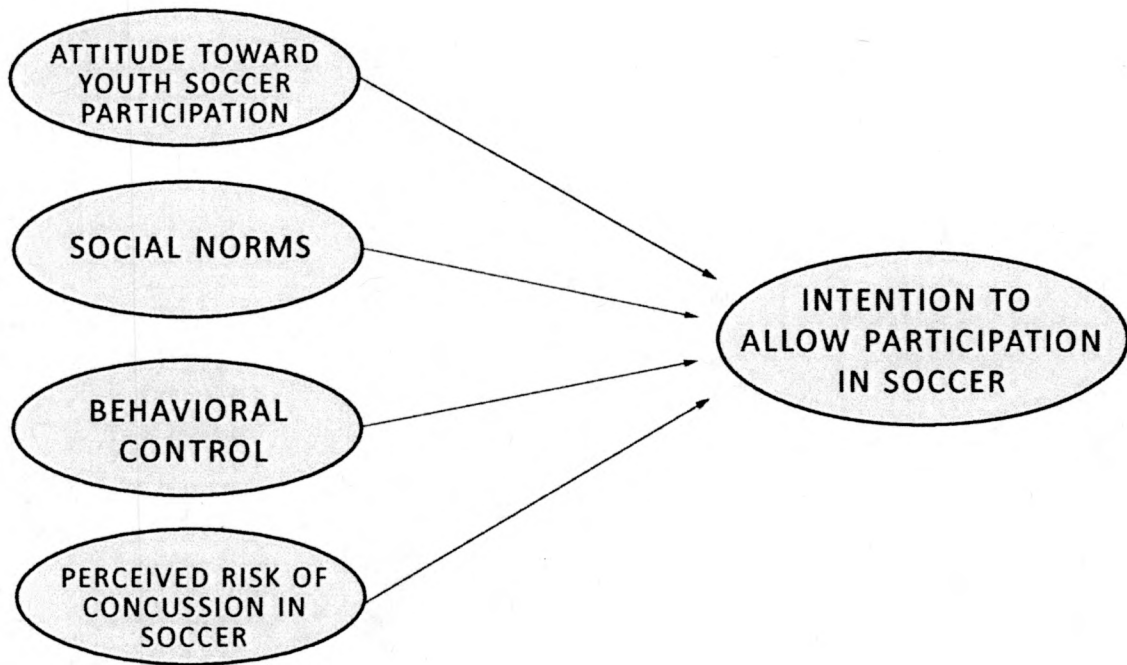
	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Attitude toward football participation	3.41	1.01	<b>.91</b>															
2. Social norms for football	3.76	.85	.46 <sup>***</sup>	<b>.88</b>														
3. Behavioral control for football	4.23	.62	.01	.04	<b>.41</b>													
4. Perception of concussion risk in football	2.26	.69	.53 <sup>***</sup>	.33 <sup>***</sup>	.03	<b>.83</b>												
5. Intent to allow football participation	3.41	1.35	.68 <sup>***</sup>	.53 <sup>***</sup>	-.06	.48 <sup>***</sup>	<b>.90</b>											
6. Attitude toward soccer participation	4.34	.69	.34 <sup>***</sup>	.05	.09	.07	.12	<b>.86</b>										
7. Social norms for soccer	4.31	.68	.09	.32 <sup>***</sup>	.21 <sup>***</sup>	-.01	.00	.38 <sup>***</sup>	<b>.93</b>									
8. Behavioral control for soccer	4.16	.59	.05	.09	.76 <sup>***</sup>	.05	-.02	.12	.20 <sup>***</sup>	<b>.35</b>								
9. Perception of concussion risk in soccer	2.87	.65	.12 <sup>**</sup>	.02	.09	.36 <sup>***</sup>	.04	.31 <sup>***</sup>	.21 <sup>***</sup>	.08	<b>.75</b>							
10. Intent to allow soccer participation	4.56	.82	.23 <sup>***</sup>	.10	.11	.03	.14	.58 <sup>***</sup>	.49 <sup>***</sup>	.15 <sup>**</sup>	.22 <sup>***</sup>	<b>.86</b>						
11. Perception of concussion knowledge	3.63	.86	.02	-.05	.09	-.08	.00	.14	.05	.13 <sup>**</sup>	-.13 <sup>**</sup>	.14 <sup>**</sup>	<b>.86</b>					
12. Actual concussion knowledge (CKI)	20.47	2.07	.00	-.03	.03	-.08	-.01	.08	.05	.06	-.03	.15 <sup>**</sup>	.32 <sup>***</sup>	-				
13. Concussion exposure / experience	4.73	2.77	-.02	-.09	.06	-.16 <sup>**</sup>	-.07	.00	.02	.09	-.21 <sup>***</sup>	.11	.47 <sup>***</sup>	.25 <sup>***</sup>	-			
14. General attitude toward concussion	2.65	.47	.33 <sup>***</sup>	.16 <sup>***</sup>	.02	.41 <sup>***</sup>	.21 <sup>***</sup>	.11	.10	.01	.23 <sup>***</sup>	.15 <sup>**</sup>	.05	.07	.05	<b>.55</b>		
15. Age	43.53	7.16	-.09	-.18 <sup>***</sup>	-.03	-.08	-.13 <sup>**</sup>	-.04	-.10	-.01	-.09	.01	.06	-.05	.18 <sup>***</sup>	-.02	-	
16. Gender	1.73	.44	-.06	.06	-.07	-.05	-.03	.04	-.01	-.06	-.01	-.03	-.16 <sup>**</sup>	-.04	-.30 <sup>***</sup>	-.24 <sup>***</sup>	-.15 <sup>**</sup>	-

Note. Reliabilities bolded in the diagonal; the possible range for all scales was 1-5, with the exception of concussion exposure (0-15) and actual knowledge of concussion (0-25); 1 = male, 2 = female; \*p < .05; \*\*p < .01; \*\*\*p < .001





*Figure 1.* Hypothesized augmented TPB model to predict parents' intentions to allow participation in youth football



*Figure 2.* Hypothesized augmented TPB model to hypothesize parents' intentions to allow participation in youth soccer

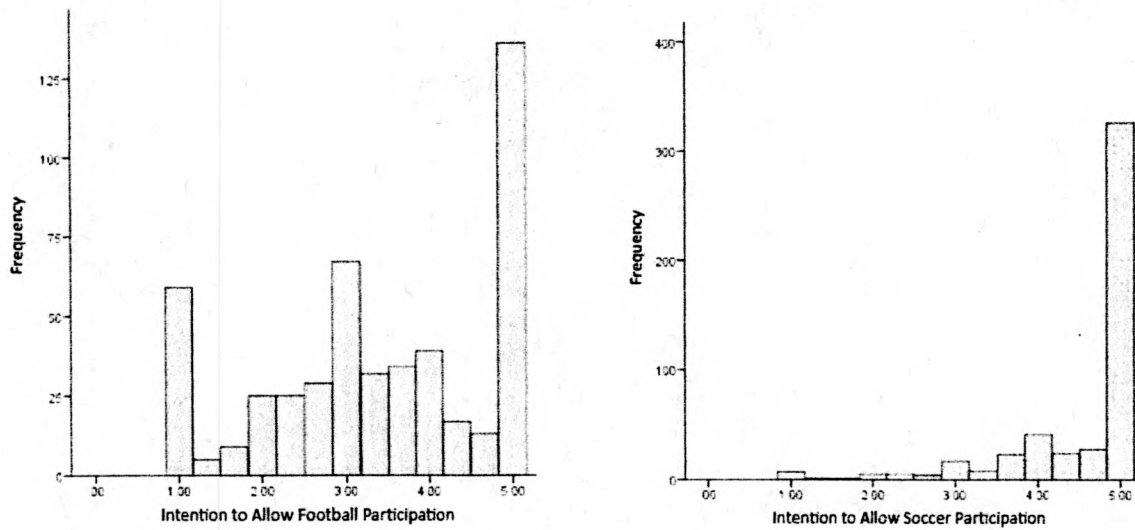


Figure 3. Distributions of participant scores for intention to allow football participation and intention to allow soccer participation

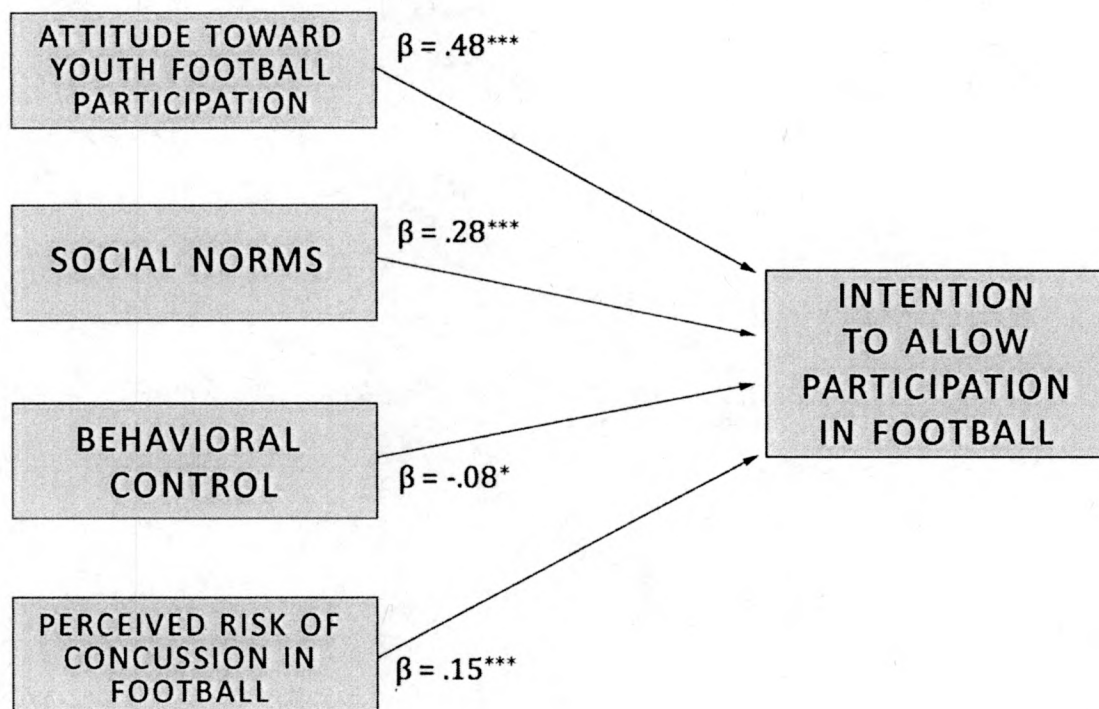


Figure 4. Multiple regression model of intention to allow child participation in football. Note. \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$

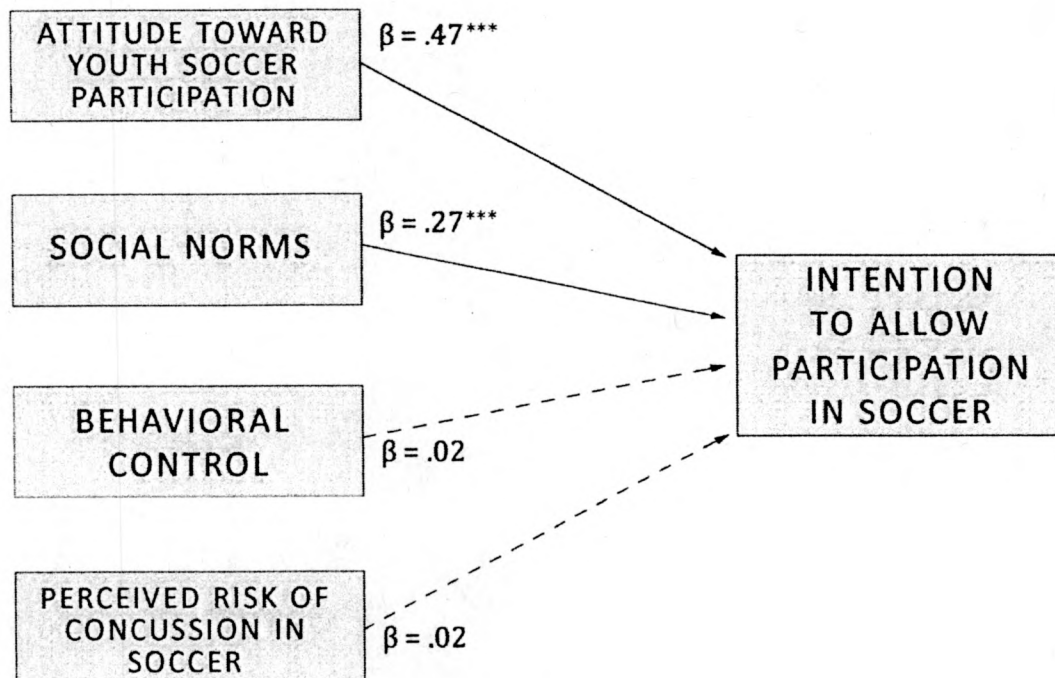


Figure 5. Multiple regression model of intention to allow child participation in soccer Note. \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ , dotted line represents no significance at  $p < .05$  level

### Appendix A

Table A1

#### *Participant Sport Participation and Coaching Experience*

Sport	Participant Sport Experience		Participant Coaching Experience		Child Sport Experience	
	Number	%	Number	%	Number	%
Baseball	260	53	109	22.2	340	69.2
Basketball	209	42.6	79	16.1	322	65.6
Cheerleading	17	3.5	13	2.6	17	3.5
Field Hockey	19	3.9	3	0.6	8	1.6
Football	80	16.3	38	7.7	211	43
Gymnastics	12	2.4	1	0.2	34	6.9
Ice Hockey	20	4.1	4	0.8	36	7.3
Lacrosse	15	3.1	10	2	85	17.3
Rugby	12	2.4	2	0.4	7	1.4
Soccer	134	27.3	70	14.3	270	55
Swimming	16	3.3	4	0.8	24	4.9
Tennis	30	6.1	5	1	19	3.9
Track & Field or Cross Country	144	29.3	25	5.1	158	32.2
Volleyball	75	15.3	18	3.7	48	9.8
Wrestling	15	3.1	4	0.8	32	6.5
Other Sport Not Listed	39	7.9	13	2.6	51	10.4
None	62	12.6	251	51.1	17	3.5

*Note.* Percentages do not total 100 as multiple sports could have been selected.



Table A2

*Participant Certifications*

Certification	Number	%
Athletic Training	11	2.2
Coaching	77	15.7
CPR	260	53.0
Emergency Medical Technician	12	2.4
First Aid	173	35.2
Nursing	32	6.5
Physician	2	0.4
Other Medical	32	6.5

*Note.* Percentages do not total 100 as multiple certifications could have been selected.

Table A3

*Participants' Previous Concussion Education / Exposure*

Type of Exposure	Number	%
<b>Formal Education</b>		
CDC Heads Up program	62	12.6
Other parent / coach concussion education	161	32.8
College classes	30	6.1
Lectures / professional development	71	14.5
None	201	40.9
Other not listed	30	6.1
Unsure	16	3.3
<b>Informal Education / Awareness</b>		
<i>Concussion</i> movie	224	45.6
<i>League of Denial</i> book	28	5.7
<i>League of Denial</i> documentary	29	5.9
NFL concussion lawsuits	313	63.7
Reports linking concussion and soccer	219	44.6
Reports linking concussion and football	361	73.5
News reports on long term effects of concussion	322	65.6
CTE (Chronic Traumatic Encephalopathy)	165	33.6
None of the above	70	14.3

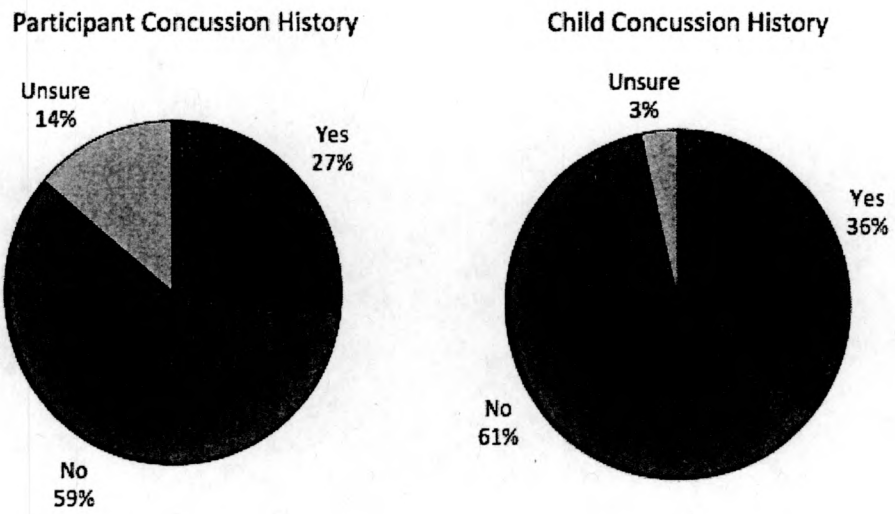


Figure A1. Participant concussion history and children's concussion history

## Appendix B

**MONTCLAIR STATE**  
**UNIVERSITY**

Dear Parent,

You are invited to participate in a study of parental attitude towards sport and concussion. I hope to learn the factors that parents use when deciding if their child can play a sport, as well as parent knowledge and perception of concussion. You were selected to participate in this study because you have at least one child under the age of 18.

If you decide to participate, please complete the following set of questions. The survey is designed to measure your attitude towards sport and concussion. It will take about 10-15 minutes to complete. You will be asked to answer questions about you and your children, as well as your opinions of soccer, football, and concussion. You may not directly benefit from this research. However, we hope this research will result in a better understanding of sport participation and bettering of future concussion education.

Any discomfort or inconvenience to you may include thinking about questions you have not previously considered. Data will be collected using the Internet. There are no guarantees on the security of data sent on the Internet. Confidentiality will be kept to the degree permitted by the technology used. Data collected during this study may be used in future studies. You may choose to provide contact information for future study. If not, no contact information is collected and the data will not be linked to you.

If you decide to participate, you are free to stop at any time. You may skip questions you do not want to answer.

Please feel free to ask questions regarding this study. You may contact me if you have additional questions at [murphy5@montclair.edu](mailto:murphy5@montclair.edu). You may also choose to contact my faculty advisor, Dr. Kevin Askew at [askewk@montclair.edu](mailto:askewk@montclair.edu). Any questions about your rights may be directed to Dr. Katrina Bulkley, Chair of the Institutional Review Board at Montclair State University at [reviewboard@mail.montclair.edu](mailto:reviewboard@mail.montclair.edu) or 973-655-5189.

Thank you for your time.

Sincerely,

Ashley Murphy

Graduate Student, Psychology Department

By clicking the link below, I confirm that I have read this form and will participate in the project described. Its general purposes, the particulars of involvement, and possible risks and inconveniences have been explained to my satisfaction. I understand that I can discontinue participation at any time. My consent also indicates that I am 18 years of age.

[Please feel free to print a copy of this consent.]

The study has been approved by the Montclair State University Institutional Review Board as study #IRB-FY15-16-46 on January 12, 2016.

**I AGREE with the terms of the study**

**SECTION 1: DEMOGRAPHICS**

This first section will ask some questions about YOU.

---

What is your gender?

- Male
- Female

What is your age in years?

What is your race? (Select all that apply)

- American Indian or Alaska Native
- Asian
- Black or African American
- Hispanic or Latin
- Hawaii Native or Other Pacific Islander
- White

What is your highest completed level of education?

- Less than high school
- High School / GED
- Some college
- 2-year degree
- 4-year degree
- Graduate degree

Which of the following organized sports have you participated in before? (Select all that apply)

- I have not participated in organized sports
- Baseball / Softball
- Basketball
- Football
- Ice Hockey
- Lacrosse
- Rugby
- Soccer
- Track and Field
- Other \_\_\_\_\_

What sports have you coached, either currently or in the past? (Select all that apply)

- I have not coached a sport before
- Baseball / Softball
- Basketball
- Football
- Ice Hockey
- Lacrosse
- Rugby
- Soccer
- Track and Field
- Other \_\_\_\_\_

Do you have any of the following certifications or qualifications? (Select all that apply)

- Certified Athletic Trainer
- Coaching Certificate
- CPR
- Emergency Medical Technician
- First Aid
- Nursing Certification (NP, RN, etc.)
- Physician
- Physician Assistant
- Other Medical \_\_\_\_\_

-----

**SECTION 2: QUESTIONS ABOUT YOUR ACTUAL CHILDREN**

Please answer the following questions based on your ACTUAL children.

-----

Please enter the genders and ages of your children (ages 0-18 only) below.

	Child Gender		Child Age
	Male	Female	in years
Child 1 (if no children, move to next question)	<input type="radio"/>	<input type="radio"/>	
Child 2 (if only 1 child, move to next question)	<input type="radio"/>	<input type="radio"/>	
Child 3 (if only 2 children, move to next question)	<input type="radio"/>	<input type="radio"/>	
Child 4 (if only 3 children, move to next question)	<input type="radio"/>	<input type="radio"/>	
Child 5 (if only 4 children, move to next question)	<input type="radio"/>	<input type="radio"/>	



Do you have any children above the age of 18?

- Yes
- No

Which sports has your child participated in, currently or in the past? (Select all that apply)

- My child has not participated in organized sports
- Baseball / Softball
- Basketball
- Football
- Ice Hockey
- Lacrosse
- Rugby
- Soccer
- Track and Field
- Other \_\_\_\_\_

-----

**SECTION 3: YOUTH SPORTS**

This next section will ask questions about your attitudes towards particular sports.

-----

Youth participation in SOCCER is

- |          |                       |                       |                       |                       |                       |            |
|----------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|------------|
| Good     | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | Bad        |
| Harmful  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | Beneficial |
| Unsafe   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | Safe       |
| Valuable | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | Worthless  |
| Negative | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | Positive   |

Youth participation in FOOTBALL is

- |          |                       |                       |                       |                       |                       |            |
|----------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|------------|
| Positive | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | Negative   |
| Harmful  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | Beneficial |
| Valuable | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | Worthless  |
| Bad      | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | Good       |
| Safe     | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | Unsafe     |

---

**SECTION 4: QUESTIONS ABOUT YOUR IMAGINARY SON, STEVE**

This next section will ask questions about your IMAGINARY SON NAMED STEVE. Steve does not currently play football or soccer. For this next section, Please answer as if you have an 8-year old son named STEVE.

---

Your 8-year old son IMAGINARY STEVE wants to play soccer this fall. Please answer the following questions as if you actually had an 8-year old son named STEVE.

I would not let Steve play soccer.

Strongly Disagree                  Strongly Agree

I would be likely to sign Steve up for soccer.

Definitely True                  Definitely False

I will let Steve play soccer.

Extremely Likely                  Extremely Unlikely

---

Your 8-year old son IMAGINARY STEVE wants to play football this fall. Please answer the following questions as if you actually had an 8-year old son named STEVE.

I would not let Steve play football.

Definitely True                  Definitely False

I would be likely to sign Steve up for football.

Strongly Agree                  Strongly Disagree

I will let Steve play football.

Extremely Unlikely                  Extremely Likely

---

Please answer the following questions as if you actually had an 8-year old son named STEVE.

---

If Steve were to play soccer for an extended period of time (over years), he would probably get a concussion at some point.

- Strongly Disagree
- Disagree
- Neither Agree nor Disagree
- Agree
- Strongly Agree

It would be likely that Steve would get a concussion this season if he played soccer.

- Strongly Disagree
- Disagree
- Neither Agree nor Disagree
- Agree
- Strongly Agree

Soccer has a high risk of concussion.

- Strongly Disagree
- Disagree
- Neither Agree nor Disagree
- Agree
- Strongly Agree

Steve would not get a concussion if he played soccer through high school.

- Strongly Disagree
- Disagree
- Neither Agree nor Disagree
- Agree
- Strongly Agree

-----  
Please answer the following questions as if you actually had an 8-year old son named STEVE  
-----

If Steve were to play football, he would probably get a concussion this upcoming season.

- Strongly Disagree
- Disagree
- Neither Agree nor Disagree
- Agree
- Strongly Agree

It would be likely that Steve would get a concussion at some point if he played football through high school.

- Strongly Disagree
- Disagree
- Neither Agree nor Disagree
- Agree
- Strongly Agree

Football has a high risk of concussion.

- Strongly Disagree
- Disagree
- Neither Agree nor Disagree
- Agree
- Strongly Agree

Steve would not get a concussion if he played football for an extended period of time (over many years).

- Strongly Disagree
- Disagree
- Neither Agree nor Disagree
- Agree
- Strongly Agree

-----  
Your 8-year old son IMAGINARY STEVE wants to play a sport this fall. Please answer the following questions as if you actually had an 8-year old son named STEVE  
-----

I have control over whether or not Steve plays soccer.

- Strongly Disagree
- Disagree
- Neither Agree nor Disagree
- Agree
- Strongly Agree

Others would pressure my decision of allowing or not allowing Steve to play soccer.

- Strongly Disagree
- Disagree
- Neither Agree nor Disagree
- Agree
- Strongly Agree

Steve would be able to play soccer without my knowing.

- Strongly Disagree
- Disagree
- Neither Agree nor Disagree
- Agree
- Strongly Agree

-----  
Your 8-year old son IMAGINARY STEVE wants to play a sport this fall. Please answer the following questions as if you actually had an 8-year old son named STEVE  
-----

I have control over whether or not Steve plays football.

- Strongly Disagree
- Disagree
- Neither Agree nor Disagree
- Agree
- Strongly Agree

Steve would be able to play football without my knowing.

- Strongly Disagree
- Disagree
- Neither Agree nor Disagree
- Agree
- Strongly Agree

Others would pressure my decision of allowing or not allowing Steve to play football.

- Strongly Disagree
- Disagree
- Neither Agree nor Disagree
- Agree
- Strongly Agree

-----  
**SECTION 5: OTHER PEOPLE'S OPINIONS**

This next section will ask about the ideas of others, whose opinions you may value when making parenting decisions.  
-----

My FAMILY would not approve of Steve playing soccer.

- Strongly Disagree
- Disagree
- Neither Agree nor Disagree
- Agree
- Strongly Agree

My FRIENDS would not approve of Steve playing soccer.

- Strongly Disagree
- Disagree
- Neither Agree nor Disagree
- Agree
- Strongly Agree

My SPOUSE (or Steve's other parent) would not approve of Steve playing soccer.

- Strongly Disagree
- Disagree
- Neither Agree nor Disagree
- Agree
- Strongly Agree

OTHER PARENTS would not approve of Steve playing soccer.

- Strongly Disagree
- Disagree
- Neither Agree nor Disagree
- Agree
- Strongly Agree

Other people in my COMMUNITY would not approve of Steve playing soccer.

- Strongly Disagree
- Disagree
- Neither Agree nor Disagree
- Agree
- Strongly Agree

My FAMILY would not approve of Steve playing football

- Strongly Disagree
- Disagree
- Neither Agree nor Disagree
- Agree
- Strongly Agree

My FRIENDS would not approve of Steve playing football

- Strongly Disagree
- Disagree
- Neither Agree nor Disagree
- Agree
- Strongly Agree



My SPOUSE (or Steve's other parent) would not approve of Steve playing football.

- Strongly Disagree
- Disagree
- Neither Agree nor Disagree
- Agree
- Strongly Agree

OTHER PARENTS would not approve of Steve playing football.

- Strongly Disagree
- Disagree
- Neither Agree nor Disagree
- Agree
- Strongly Agree

Other people in my COMMUNITY would not approve of Steve playing football.

- Strongly Disagree
- Disagree
- Neither Agree nor Disagree
- Agree
- Strongly Agree

-----  
There will be no more questions about your imaginary son Steve.  
-----

### **SECTION 6: CONCUSSIONS**

We will now ask questions pertaining to concussions.  
-----

I know a good amount about concussions.

- Strongly Disagree
- Disagree
- Neither Agree nor Disagree
- Agree
- Strongly Agree

If my child had a concussion, I would know how to recognize it.

- Strongly Disagree
- Disagree
- Neither Agree nor Disagree
- Agree
- Strongly Agree

I know more about concussions than the average person.

- Strongly Disagree
- Disagree
- Neither Agree nor Disagree
- Agree
- Strongly Agree

I do not know much about concussions.

- Strongly Disagree
- Disagree
- Neither Agree nor Disagree
- Agree
- Strongly Agree

-----  
The following questions will test your knowledge of concussions. Please answer to the best of your ability.  
-----

There is a possible risk of death if a second concussion occurs before the first one has healed.

- True
- False

Running everyday does little to improve cardiovascular health.

- True
- False

People who have had one concussion are more likely to have another concussion.

- True
- False

Cleats help athletes' feet grip the playing surface.

- True
- False

In order to be diagnosed with a concussion, you have to be knocked out.

- True
- False

A concussion can only occur if there is a direct hit to the head.

- True
- False

Being knocked unconscious always causes permanent damage to the brain.

- True
- False

Symptoms of a concussion can last for several weeks.

- True
- False

Sometimes a second concussion can help a person remember things that were forgotten after the first concussion.

- True
- False

Weightlifting helps to tone and/or build muscles

- True
- False

After a concussion occurs, brain imaging (e.g., CAT Scan, MRI, X-ray, etc.) typically shows visible physical damage (e.g., bruise, blood clot) to the brain.

- True
- False

If you receive one concussion and you have never had a concussion before, you will become less intelligent.

- True
- False

After 10 days, symptoms of a concussion are usually completely gone.

- True
- False

After a concussion, people can forget who they are and not recognize others but be perfect in every other way.

- True
- False

High school freshmen and college freshmen tend to be the same age

- True
- False

Concussions can sometimes lead to emotional disruptions.

- True
- False

An athlete who gets knocked out after getting a concussion is experiencing a coma.

- True
- False

There is rarely a risk to long-term health and well-being from multiple concussions.

- True
- False

-----  
The following page contains two scenarios that will be used to further assess your concussion knowledge. Please answer to the best of your ability.  
-----

Scenario 1: While playing in a game, Player Q and Player X collide with each other and each suffers a concussion. Player Q has never had a concussion in the past. Player X has had 4 concussions in the past.

It is likely that Player Q's concussion will affect his long-term health and well-being.

- True
- False

It is likely that Player X's concussion will affect his long-term health and well-being.

- True
- False

-----  
Scenario 2: Player F suffered a concussion in a game. She continued to play in the same game despite the fact that she continued to feel the effects of the concussion

Even though Player F is still experiencing the effects of the concussion, her performance will be the same as it would be had she not suffered a concussion

- True
- False

-----  
Think about someone who has had a concussion. Check off the following signs and symptoms that you believe someone may be likely to experience after a concussion.

- Hives
- Feeling in a "fog"
- Headache
- Weight gain
- Difficulty speaking
- Feeling slowed down
- Arthritis
- Reduced breathing rate
- Sensitivity to light
- Excessive studying
- Difficulty remembering
- Difficulty concentrating
- Panic attacks
- Dizziness
- Drowsiness
- Hair loss

-----  
The following questions will ask about your opinions of and experience with concussions.  
-----

A concussion is a very serious injury.

- Strongly Disagree
- Disagree
- Neither Agree nor Disagree
- Agree
- Strongly Agree

No sport is worth even the smallest risk of concussion.

- Strongly Disagree
- Disagree
- Neither Agree nor Disagree
- Agree
- Strongly Agree

Proper steps can be taken to minimize concussion risk.

- Strongly Disagree
- Disagree
- Neither Agree nor Disagree
- Agree
- Strongly Agree

It wouldn't be that bad if my child got a concussion.

- Strongly Disagree
- Disagree
- Neither Agree nor Disagree
- Agree
- Strongly Agree

I am afraid of my child getting a concussion.

- Strongly Disagree
- Disagree
- Neither Agree nor Disagree
- Agree
- Strongly Agree

Concussion is a big risk of playing youth sports.

- Strongly Disagree
- Disagree
- Neither Agree nor Disagree
- Agree
- Strongly Agree

-----  
The following questions will look at your experience and exposure to concussion. Please answer as accurately and honestly as possible.  
-----

Have you taken any of the [sic] following concussion education programs? (Select all that apply)

- CDC Heads Up Program
- Other concussion education for coaches and/or parents
- College Classes
- Lectures / Professional Development
- I have not taken any concussion education programs
- Other not listed
- I'm not sure if I have taken these programs



Have you ever had a concussion?

- Yes
- No
- I'm not sure

Has your child ever had a concussion?

- Yes
- No
- I'm not sure

Have you seen or heard of any of the following? (Select all that apply)

- CONCUSSION, starring Will Smith, in theaters December 2015
- League of Denial book
- League of Denial documentary
- NFL concussion lawsuits
- Reports linking concussion and soccer
- Reports linking concussion and football
- News reports on the long term effects of concussion
- CTE (Chronic Traumatic Encephalopathy)
- None of the above

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### SECTION 7: FREE RESPONSE- ACTUAL CHILDREN

This is the final section. For the questions that follow, please answer based on your ACTUAL children under the age of 18.

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Will at least one of your children play football this coming season?

- Yes
- No

Why or why not? (List only one reason)

Please list another reason why or why not.

If you do not have a second reason, please skip to the next page.

Please list a third reason why or why not.

If you do not have a third reason, please skip to the next page.

Will at least one of your children play soccer this coming season?

- Yes
- No

Why or why not? (List only one reason)

Please list another reason why or why not.

If you do not have a second reason, please skip to the next page.

Please list a third reason why or why not.

If you do not have a third reason, please skip to the next page.

Do you have a child that previously played football but has since stopped playing?

- Yes
- No

If yes, list one reason your child no longer plays football.

If no, please skip to the next page.

Please list another reason why your child no longer plays.

If you do not have a second reason, please skip to the next page.

Please list a third reason why your child no longer plays.

If you do not have a third reason, please skip to the next page.

[Note: this question should have been worded "soccer" and discarded from analysis.]

Do you have a child that previously played football but has since stopped playing?

- Yes
- No

If yes, list one reason your child no longer plays soccer.

If no, please skip to the next page.

Please list another reason why your child no longer plays.

If you do not have a second reason, please skip to the next page.

Please list a third reason why your child no longer plays.

If you do not have a third reason, please skip to the next page.

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If you would like to be considered for future studies, please enter your contact information. If you do not want to be contacted, please hit >> to complete the survey.

Name

Email

Phone