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To Play or Not to Play Youth Tackle Football: Health- and League-Related Factors in Parents' Decision Making

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Executive Summary

This study examined parental decision-making factors regarding their child's participation in tackle (TF) versus non-tackle (NTF) youth football leagues (YFLs, n = 91). The study also aimed to determine if these variables differed between parents who allowed their child to participate in TF and those who only allowed their child to participate in NTF. This study was of cross-sectional survey design and included items on parent demographics, child demographics, and factors influencing parent decision-making, divided into two groups: health- and league-related factors. The survey was piloted, housed, and created in a web-based platform. YFL parents rated decision-making factors on a 6-point scale. Descriptive statistics were run for all demographic variables, and non-parametric test were utilized to compare responses between groups. The Mann-Whitney U test was used to compare TF versus NTF, parent sex, parent concussion history, and child's concussion history. The Kruskal-Wallis test was employed to compare parent sport history. Female parents (n = 61) rated injury risk and concussion risk higher than male parents (n = 30). Parents who did not play a sport (n = 14) rated CTE higher than parents who played football (n = 13), another sport (n = 46), or football plus another sport (n = 18). The NTF parents (n = 10) rated injury risk, concussion risk, and CTE risk higher than TF (n = 81), while TF parents rated coach's level of training, league success, and league safety higher than NTF. This study provides insights into parents' decision-making processes and may help YFL programs tailor their approach to address these concerns and provide a safer environment for children participating in YFL.

Keywords

Youth sports, Theory of Planned Behavior, recreational sports, sports medicine, football

Introduction

Despite high school football reaching its peak participation (1,112,303 athletes) in 2008-09, media reports have noted declining numbers since, with a documented 9.6% drop in participation from 2009-19 (Cook, 2019). In 2018, it was estimated that 989,000 youth athletes participated in tackle football, with similar numbers of 839,000 athletes participating in flag football (State of Play: Trends and Developments in Youth Sports, 2019). In the year leading up to this, it is estimated that participation in youth (6-12 yrs) tackle football decreased by 4%, while youth flag football only experienced a 0.3% decrease in participants (State of Play: Trends and Developments in Youth Sports, 2019). The decrease in participation is anecdotally attributed to parents' concerns regarding safety, specifically as it is related to concussion. From 2010-2016, it was reported that 5- to 24-year-olds accounted for an estimated 2.7 million emergency department visits annually, due to sport-related injuries (Rui et al., 2019). Of the recreation and sports activities reported in this study, football accounted for the largest percentage (20.2%) of emergency department visits in this age group (Rui et al., 2019). Previously, youth football injury rates have been reported at 2 to 17.8 per 1,000 athlete exposures, with a higher rate observed in games compared to practice (Dompier et al., 2007; Turbeville et al., 2003). Concussions are reported to comprise 9.6% of all injuries captured by the Youth Football Surveillance Program (Dompier et al., 2015). Additionally, youth accounted for the largest proportion (10.1%) of athletes with documented concussions who returned to play in less than 24 hours, when compared to their high school and collegiate counterparts (Kerr et al., 2016). With youth football participation numbers fluctuating and concussion prevalence recognized as a significant concern, understanding a possible connection between these factors is essential for stakeholders and clinicians working in these populations.

Repetitive head impact (RHI) exposure during American tackle football is of interest to researchers, parents, athletes, and sports medicine professionals due to their association with long-term neurological changes and deficits (Montenigro et al., 2017). One disease thought to be associated with significant long-term RHI is Chronic traumatic encephalopathy (CTE); a neurodegenerative disease that can only be diagnosed postmortem (McKee et al., 2016). CTE has been primarily diagnosed postmortem in former athletes that participated in American football or boxing (Bieniek et al., 2015; McKee et al., 2013). The association of CTE, RHI, and football together in the media could be an additional factor influencing the decision-making process of parents when determining their children's sport participation (Christine Gillette, 2016). Parents face the challenge of interpreting media coverage that may misinterpret or misrepresent research published on these factors, which may in turn influence their choice to allow contact sport participation. We believe this could also be impacted by the selection of only higher injury rates in media reports to catch the attention of viewers, rather than accurately summarizing all available evidence. An examination of mild traumatic brain injury and concussion media articles found 58% of articles had misleading titles, 74% had misrepresentative reporting, 67% deceiving claims, and 58% had inappropriate extrapolation (Choi & Feller, 2021). A content analysis of online media articles reported that the use of modifiers or alternate words for concussion primarily originate from journalists and reported no evidence of this inconsistent information coming from medical staff (Ahmed & Hall, 2017). These poor reporting practices may cause parents to become confused or infer risk and relationships between mild traumatic brain injury, concussion, and CTE differently than researchers intended.

The association of football-related RHI and concussion have spurred debate regarding the age at which youth should begin playing tackle football (Fishman et al., 2017; Kaplan et al., 2013). The American Academy of Pediatrics' Policy Statement on tackling in youth football recommends non-tackling leagues be expanded and considered by parents in addition to tackling leagues that are more common (Council On Sports & Fitness, 2015; Peterson et al., 2017). Critics have argued that eliminating contact and tackling would prevent young athletes from learning the proper mechanics and skills required to tackle, absorb a tackle, and fall safely (Council On Sports & Fitness, 2015). To mitigate potential injuries associated with youth participants of varying size, youth leagues have employed a variety of strategies to relegate anthropometric and maturation-based concerns (age, weight, skill, maturity). These measures include grouping YFL participants by individual maturation characteristic or through a combination of the markers used in bio-banding (Malina et al., 2007; Malina et al., 2019). However, the use of these methods for injury prevention may not be supported. Recently, injury rates were found to be similar for age versus age and weight restricted leagues, with overall injury rates 9.1 and 11.4 per 1,000 athlete exposures being reported respectively (Kerr, Marshall et al., 2015).

Despite league specific efforts to minimize injury risk in American youth football, injury rates remain high warranting continued attention. One alternative to maturity and size categorization is flag football. In flag football, rather than forcefully tackling an opponent of a defensive team removes a flag (Kaplan et al., 2013). To promote parental buy in to this style of play, it is important to identify factors informing in perceived benefits and risks involved in their league choice decisions. Parents who value football more strongly have been reported to have higher (+.44 more) thresholds for number of concussions their child could sustain before they would permanently retire their child from contact sports, than those who value football less strongly (Kroshus et al., 2021). While this study did not find differences between parents based on other demographics (i.e., parent education, child's concussion history, and child's age) the sample population included only families of youth in one tackle football league who were enrolled following their child's concussion. In addition to the parents' sport and injury history subsequent investigations could frame variable selection through a theoretical lens like the Theory of Planned Behavior (TPB) (Ajzen, 1991, 2002).

The TPB provides valuable insights, allowing for better understanding of the mechanisms underlying parental decision making in youth football. In TPB the weight of social norms, specific behavior, feeling of perceived control, and influence of attitudes toward outcomes of actions and decisions are studied to understand the intentions of an individual's behavior (Ajzen, 1991, 2002). The evaluation of these factors then informs an individual's intention or motivation to perform the behavior specified, those beliefs or evaluations that are favorable or negative increase or decrease these intentions, respectively (Ajzen, 1991, 2002). For example, parents who have seen more injuries because of their competitive experience may weigh the benefits and drawbacks of a sport more deeply for their child. Current quantitative literature employing the TPB suggests that several factors influence a parent's decision to enroll their child in youth football, including behavioral control, attitude toward football participation, social norms, and perceived risk of concussion (Murphy et al., 2017). Similarly, current qualitative literature employing TPB found that cognitive and social benefits of football participation were linked to positive attitudes toward football participation; while

community pressures limited the control parents felt over their decision to have their child participate (McGlynn et al., 2020).

A deeper understanding of factors influencing parents' decision-making process for league selection will provide valuable insights for recreational youth football league participation and safety. Therefore, the primary purpose of this study was to describe parents' opinions regarding health and league factors related to YFL participation and determine if parent demographics influenced these opinions. The secondary purpose was to determine if these variables differed between parents who allowed their child to participate in tackle football (TF) and those who only allowed their child to participate in non-tackle football (NTF).

Methods

Participants

Participants were 91 parents and/or legal guardians of TF (n = 81) and NTF (n = 10) players (ages 7 to 13), from recreational leagues in South Carolina. The recreational leagues were selected since they offered both flag and tackle football programs. The YFLs utilized in this study group participants into teams by utilizing age or weight restrictions. Participating YFLs were associated with local recreational departments and were not affiliated with a national youth football organization.

Measurement/Instruments

The survey consisted of three sections: parent demographics, child demographics, and factors influencing parent decision making. For the purposes of presenting the results, non-demographic factors examined within the survey were divided into two groups following data collection and analysis. The two groups were health and league related factors. Parent demographic information collected included sex (male/female), previous sports participation history (no sports participation, football, other), injury background (no injury, missed <1 week, 1-2 weeks, 3-4 weeks, >1 month), parent concussion history (history, no history), and highest level of competition (youth, high school, college, minor league, professional, n/a). The child demographic section collected the number of children per parent enrolled in youth football, sex (male/female), type of football participation (tackle/flag/both), the age they started playing football, child concussion history (history/no history) and time missed due to injury associated with football participation. The section assessing factors influencing a parent's decision to enroll their child in football included the type of league (TF vs. NTF), health factors (risk of injury risk of CTE, risk of concussion, child's size, long term health effects, health benefits, safety concerns), and league factors (knowledge of coaches training, league success, and league safety). This section utilized a 6-point likert scale (1= strongly disagree to 6= strongly agree) and include statements such as, "The reputation of the leagues success impacted my decision on what style of football my child participated in."

The designation of TF or NTF was determined based on parent response the response of parents to two questions. These questions were (1) "What type(s) of Youth Football League does your child participate in?"; and (2) "If only flag, would you allow tackle?". If parents reported their child played only NTF and they would not allow TF then they were categorized as NTF. All parents allowing TF or who would allow TF in the future were categorized as TF.

Procedure

The study was approved by the institutional review board at the University of South Carolina. This survey was housed and created in a web-based platform. The survey was piloted for face validity and to determine time to completion, feedback was utilized to refine the survey before it was distributed. Once refined, an email containing the survey was sent from the recreational YFLs to all parents/guardians. The survey began within an invitation to participate that included the purpose of the study, questions examples, and time commitment. Initial invitations to participate were sent in August of 2018, with enrollment closing in November of 2018. Two email reminders were sent to participants requesting participation. Those who chose to participate implied consent by beginning the survey. Parents indicated the level of importance each variable played in their decision by responding to items representing health risk and league variables on a scale of 1 to 6 where 1 = low agreement of importance and 6 = high agreement of importance.

Data Analysis

Descriptive statistics were calculated for all survey questions. Since the survey used a Likert Scale, data were approached as ordinal, and non-parametric tests were utilized. Man Whitney-U tests were used to compare TF and NTF parent's opinion on health and league related factors. Man Whitney-U tests were also used to compare parent sex, parent concussion history, and child's concussion history on the same variables. Kruskal Wallis test was used to compare parent sport history groups. Statistics were calculated using SPSS (© IBM version 27). Effect size was calculated using the following formula, $r = \frac{|z|}{\sqrt{n}}$, with z representing the standardized test statistic and n representing the number of pairs. Effect size r of less than 0.2 = small effect, 0.5 = medium effect, 0.8 = large effect (Kim, 2015).

Results

Parent and Child Demographics

Parents (n = 91) completing the survey ranged between 25 and 60+ years. Most parents responding were female (67.0%) and did not play NTF or TF (64.8%). Parents reported having between 1 and 3 of their children participate in football (NTF or TF), with a starting participation age between 5 and 13 (7.9 ± 2.4). Most parents reported their children were participating in TF (40.6%). Complete parent and child participant demographics can be found in Table 1 and Table 2, respectively.

Parent Perception of Health-Related Variables

Of all parents surveyed, 61.5% suggested the health benefits associated with football impacted their decision on what style of football their child participated. Results indicate 76.9% of parents rated long-term health effects as scoring ≤ 3 on the likert scale for agreement of being considered in their decision to allow their child to play football. On the Likert scale 58.2% of parents rated concussion risk ≥ 4. Responses of parents regarding all health variables are reported in Table 3. Levels of reported influence from children's risk of injury when making league type selection were higher among parents of NTF athletes (mean ± standard deviation 5.6 ± 0.7, median = 6), U = 99.00, $p < .001$. Levels of influence from the news of CTE (4.5 ± 1.4, mdn = 5), U = 175.00, $p = .008$; and risk of concussion (5.5 ± 0.8, mdn = 6) were higher among parents of NTF athletes when deciding on the type of league, U = 88.00, p < .000. Although these results were

Table 1
Demographics and Characteristics of Parents of Youth Football Players

Parent Demographics (n=91)	
Characteristic (No. Reporting)	Frequency (%)
Sex	
Male	30 (32.97)
Female	61 (67.03)
Self-Identified	0 (0.00)
Age	
20-29	3 (3.29)
30-39	41 (45.05)
40-49	38 (41.75)
50-59	8 (8.79)
60+	1 (1.10)
Sports participation	
Football	13 (14.29)
Another Sport (Not Football)	46 (50.55)
Football Plus Another Sport	18 (19.78)
None	14 (15.38)
Parents' type of football league participation	
Youth Flag	4 (4.40)
Youth Tackle	23 (25.27)
Both	5 (5.49)
Neither	59 (64.84)
Highest level of sports competition	
Youth	10 (10.99)
High School	44 (48.35)
College	19 (20.88)
Minor League/Professional	0 (0.00)
N/A	18 (19.78)
Parents' history of concussion	
Yes	15 (16.48)
No	76 (83.52)
Parents' knowledge of coaches' training	
USA Football's Heads up Training	12 (13.19)
CPR/AED Certified	5 (5.50)
Tackling Education	8 (8.79)
Concussion Education	15 (16.48)
I do not know	51 (56.04)
# of children currently signed up	
1	69 (75.82)
2	21 (23.08)
≥ 3	1 (1.10)

significant, they represented a weak association, as the effect sizes were small for level of influence from risk of injury (r = .42), risk of CTE (r = .31) and risk of concussion (r = .43) No other statistically significant differences were found between league type and health related variables. Higher levels of influence on league selection regarding CTE news were higher for parents who did not play an organized sport (3.93 ± 1.3, mdn = 5), H = 7.99, p = .046. Levels of influence for risk of injury (3.97 ± 1.7, mdn = 4) U = 675.00, p = .039, and risk of concussion (3.82 ± 1.6, mdn = 4), U = 642.00, p = .019, were significantly higher for female parents than male parents. No other statisti-

Table 2
Demographics and Characteristics of Youth Football Players

Child Demographics (n=91)	
Characteristic (No. Reporting)	Frequency (%)
Type of Youth Football League	
Flag	18 (19.78)
Tackle	37 (40.66)
Both	36 (39.56)
If only flag, would you allow tackle?	
Yes	29 (31.87)
No	10 (10.99)
N/A	52 (57.14)
Most time missed due to sports injury	
<1 Week	16 (17.58)
1-2 Weeks	9 (9.89)
3-4 Weeks	3 (3.30)
>1 Month	6 (6.59)
No injuries	57 (62.64)
History of concussion due to football?	
Yes	6 (6.59)
No	85 (93.41)

cally significant differences were found with demographics and level of influence with health-related variables on the type of league selected (Table 3. and Table 4.)

Parent Perception of League Variables

Most parents responded, "I don't know," regarding their YFL coaches' cardiopulmonary resuscitation (CPR)/Automated External Defibrillator (AED) certification (94.5%), tackling education (91.2%), and concussion education (83.5%). Of all parents surveyed, 67% reported the reputation of league safety had levels of influence of ≥ 4 for their decision on type YFL. Responses of parents regarding additional league variables are reported in Table 3. Level of influence from the leagues' success when determining their child's participation was higher for parents of TF athletes (3.7 ± 1.6, mdn = 4), U = 210.00, p = .011 compared to NTF parents. Effect size r of less than 0.2 = small effect, 0.5 = medium effect, 0.8 = large effect (Kim, 2015). Influence from the child's size did not influence a parent's decision to allow their child to play in either YFL (3.9 ± 1.7, TF mdn = 4, NTF mdn = 4), U= 403.0 p = 0.979 (Table 4). While these results were statistically significant, they represented weak associates, since the effect sizes were small for the influence of the leagues reputation of success (r = .27), reputation of safety (r = .22), and knowledge of the coaches training (r = .28). There were no statistically significant differences in level influence on league selection based on the parent's sex or parent's level of sport participation.

Table 3

Level of Influence from Health & League Related Factors on Parents' (n = 91) Decision Making (Likert Scale Strongly Disagree = 1, Strongly Agree = 6)

Statement (Frequency (%))	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
The risk of my child getting injured impacted my decision on what style of football my child participated in.	12 (13.2)	17 (18.7)	4 (4.4)	23 (25.3)	20 (22.0)	14 (16.5)
Recent news on Chronic Traumatic Encephalopathy (CTE) in football impacted my decision on what style of football my child participated in.	12 (13.2)	31 (34.2)	6 (6.6)	21 (23.1)	17 (18.7)	4 (4.4)
The risks of concussions impacted my decision on what style of football my child participated in.	12 (13.2)	18 (19.8)	8 (8.8)	23 (25.3)	20 (22.0)	10 (11.0)
My child's size impacted my decision on what style of football my child participated in.	7 (7.7)	22 (24.2)	5 (5.5)	21 (23.1)	16 (17.6)	20 (22.0)
The risk of long term health effects impacted my decision on what style of football my child participated in.	12 (13.2)	19 (20.9)	4 (4.4)	19 (20.9)	20 (22.0)	17 (18.7)
The health benefits associated with football impacted my decision on what style of football my child participated in.	8 (8.8)	17 (18.7)	10 (11.0)	20 (22.0)	26 (28.6)	10 (11.0)
The safety concerns associated with football impacted my decision on what style of football my child participated in.	11 (12.1)	17 (18.7)	7 (7.7)	17 (18.7)	24 (26.4)	15 (16.5)
Knowledge of the coaches training impacted my decision on what style of football my child participated in.	9 (9.9)	28 (30.8)	7 (7.7)	20 (22.0)	20 (22.0)	7 (7.7)
The reputation of the league's success impacted my decision on what style of football my child participated in.	11 (12.1)	22 (24.2)	4 (4.4)	21 (23.1)	24 (26.4)	9 (9.9)
The reputation of the league's safety impacted my decision on what style of football my child participated in.	9 (9.9)	19 (20.9)	2 (2.2)	14 (15.4)	32 (35.2)	15 (16.5)

Discussion

Using the theoretical framework of TPB as guide, this study aimed to determine if parent demographic factors were associated with parents' opinions regarding health and league factors related to YFL participation. Additionally, this study intended to determine if these variables differed between parents who allowed their child to participate in TF and those who only allowed NTF participation.

Parents' Perception of Health-Related Factors

Overall, injury risk was most influential in NTF parents decision making as compared to TF parents, and more so among mothers than fathers which was not surprising considering it is a contact sport and the associated size variability of boys 7 to 13 years of age. Previous research found injury rates for youth football to range from 2 to 17.8 injures per 1,000 exposures (Dompier et al., 2007; Turbeville et al., 2003). A similar study identified flag football injuries occurred at rate of 5.77 per 1,000 exposures, which was higher than that of the TF team utilized for comparison that had a rate of 2.60 injuries per 100 exposures (Peterson et al., 2017). While this information supports parents of YFL athletes overall concern for risk of injury associated with football, it provides evidence that parents of NTF athletes may overestimate the risk associated with tackle football compared to flag.

Table 4

Parents Who Would Allow Tackle Football (TF, n = 81) vs Non-Tackle Football (NTF, n = 10) Parents: Level of Influence of Health- & League-Related Factors on Decision Making (Likert Scale: Strongly Disagree = 1, Strongly Agree = 6)

	Mean	Std. Deviation	Median	Effect Size (r)
Child's Risk of injury	3.7	1.7		.42
TF Parents	3.5	1.6	4	
NTF Parents*	5.6	0.7	6	
League Reputation of Success	3.6	1.6		.27
TF Parents*	3.7	1.6	4	
NTF Parents	2.3	1.3	2	
League Reputation of Safety	3.9	1.7		.22
TF Parents*	4.1	1.6	5	
NTF Parents	2.8	1.6	2	
CTE News	3.1	1.5		.32
TF Parents	2.9	1.4	2	
NTF Parents*	4.5	1.4	5	
Child's Risk of Concussion	3.7	1.6		.43
TF Parents	3.3	1.5	4	
NTF Parents*	5.5	0.9	6	
Knowledge of Coaches Training	3.4	1.5		.28
TF Parents*	3.5	1.6	4	
NTF Parents	2.1	0.3	1	
Child's Size	3.9	1.7		.00
TF Parents	3.8	1.5	4	
NTF Parents	3.0	1.6	4	

*Denotes groups with a statistically significant difference.

Although long-term health effects were less of a concern, NTF parents indicated that recent CTE-related news influenced their decision more than TF parents and this was particularly apparent among parents without personal experience of playing organized sport. Parents are not the only ones to voice concern on this issue; due to risk of potential injuries and possible long-term effects such as CTE, some physicians have called for a reduction in the number of contact practices, an age-based postponement of tackling, and even a ban on high school football (Council On Sports & Fitness, 2015). Although not every athlete will sustain concussion during participation, the risk of RHI exposure still exists within youth football. It has been reported that tackle and flag football athletes sustained twice as many head impacts during games compared to practice (Sarmiento et al., 2021). The same study reported that tackle football athletes experiencing 20 times more head impacts per game than flag football athletes (Sarmiento et al., 2021). While differences in the frequency of RHI and the magnitude of the impacts exist between the styles of football, there is still a risk of RHI for both types of football supporting parents' overall concern regarding the risk of CTE in youth football and not a particular YFL.

NTF parents and female parents indicated a that concussion risk greatly influenced their decision to avoid TF. This finding mirrors previous TPB research that reported perceived risk of concussion as a driving factor influence parents' intention to allow their child's participation in football (Murphy et al., 2017). Similarly, the likelihood of a child sustaining another concussion and experiencing cognitive issues later in life were identified as leading factors, using TPB, to understand what would stop their child

from playing football, after sustaining a concussion (Kroshus et al., 2021). Although parents were concerned about the risk of concussion, the majority of parents indicated their child has never sustained a concussion. When applying TPB these findings may suggest that risk of concussion is weighted more negatively, or that in addition to the weighting of concussion decisions may be tied to external sources (i.e., vicarious experiences, media, educational campaigns) rather than personal experience. Between 2009 and 2014, all 50 states passed youth sports concussion laws designed to promote safety in youth sports (Fishman et al., 2017). A study examining trends of sports-related concussions in high school and youth athletes, reported an increase in new concussion rates and a decrease in recurrent concussions after the law was implemented (Yang et al., 2017). Researchers believe the increased concussion rates may be correlated with an increase in awareness and identification of concussions as well as removal of the athlete from participation and return-to-play requirements set by the law (Baugh et al., 2014; Rivara et al., 2014). However, others believe that this may be attributed more so to changes in socioecological factors at the interpersonal and intrapersonal levels (Kerr et al., 2014; Kroshus et al., 2014; Silverberg et al., 2013). Although these laws are state dependent, many of them only apply to scholastic or school-sponsored sport.

Frequently, youth recreational leagues are not named in state laws regulating concussion education and management. A study of concussion legislation found that only 16 of 50 states have legislation that is inclusive to public schools, private schools, and youth sports organizations (Potteiger, 2018). Therefore, in most states, the burden of developing policies and addressing parent concerns regarding concussion education and management becomes the responsibility of YFLs. Although parents have been reported to have high scores on concussion knowledge, they have reported a lack of confidence in identifying subjective symptoms on their own (Meyer et al., 2023). The lack of confidence parents have reported in identifying symptoms (Meyer et al., 2023), poor reporting practices (Choi & Feller, 2021), and responsibility of YFLs to develop policy (Potteiger, 2018), may have been factors that influenced the weighting of health risks by parents in the present study. This idea would mirror previous TPB research finding that parents face complex risk decisions regarding their children's football participation, balancing the acknowledged risk of concussions with the perceived cognitive and social benefits, while also dealing with social factors like community pressures that limit their control over the decision (McGlynn et al., 2020).

Parents' Perception of League-Related Factors

Our findings suggested the size of the child did not have a high level of influence the parents' decision-making process for participation in YFLs. In recent years, YFLs have been pursuing options for increased safety that often focus on team restrictions based on anthropomorphic factors. An example of this is the age-and-weight (AW) playing standard, children are matched by some combination of age and weight (Kerr, Marshall, et al., 2015). Another playing standard would be age-only (AO), this playing standard organizes children by age or grade in school (Kerr, Marshall et al., 2015). However, a recent systematic review and meta-analysis found that the incidence of concussion in leagues with age and weight restrictions was not statistically significant compared to leagues that operated from standard age based team divisions (Pankow et al., 2021). Moreover, when comparing age and weight restricted YFLs, no statistically significant difference in injury rates were found (Kerr, Marshall et al., 2015). Despite no differences in the age versus weight of an athlete, recent research has identified po-

tential health risk considerations associated with other factors of athlete maturity. One other indicator of maturity that has been identified by previous research as having a potential influence on increased health risk is body mass index. A study on the influence of youth anthropometrics and head impact forces (linear and rotational acceleration) in football found, body mass index categories have significant differences in head impact data between body mass index categories (Yeargin et al., 2018). Parents may have been influenced by this information in the weighting of these factors; therefore, it may be more beneficial for YFLs to focus other methods of league structural changes and education to improve athlete safety and quell the concerns of parents.

Our results indicate coach education was of high bearing on parents' league decision, for those who allowed tackle football participation. Supporting parents' views on the importance of this factor, previous research has indicated that, athletes who participated in YFLs that required coaches training accumulated fewer head impacts (Kerr, Yeargin, et al., 2015). Additionally, parents indicated their decision to allow their child to participate in football would be influenced on the coaches' level of training, despite most parents not knowing what level of training was obtained by the coaches. Several YFLs, including USA Football and Pop Warner, increased safety and training practices in response to the current perceived risk of football (Rizzone et al., 2013). However, a recent report estimated that less than 30% of youth coaches received updated training (within one year of being surveyed) on several topics including CPR, concussion management, safety and injury prevention, or sports skills and tactics (Institue, 2019). By mandating coaching education and maintaining updated knowledge on safety practices and precautions youth leagues can protect their athletes and appeal to parents' league choice decisions.

This study also indicates that parents who would allow their child to participate in TF agreed that the reputation of the league's safety had a high level of influence on their decision. These results were not unexpected; TF is recognized for having a greater frequency of impacts, thus correlating to increased injury risk. Previous research on coach education and injury rates in youth football found a combination of Heads Up Football and Pop Warner practice contact restriction guidelines resulted in the lowest rates of injury, compared to the Heads Up Football program alone, and a non-Heads up Football program (Kerr, Yeargin et al., 2015). This evidence supports the importance of coaching and safety certifications in YFLs. By advertising these outcomes, in addition to the training of coaches, youth leagues can educate parents on the safety measures being taken to protect participants.

Although the present study found that league safety was an influential factor in parents' choice to allow TF participation, most parents could not identify the type of training held by coaches in their league. This may have been, in part, due to their consideration of league success when selecting a YFL. In a previous qualitative study utilizing TPB, parents disclosed that the cognitive and social benefits their children gained as a result of football tackle football participation were just as important as injury risk in their league choice making (McGlynn et al., 2020). Parents who allowed their children to participate in tackle football have been identified as disregarding information contradicts their own views as well as selectively emphasizing information that confirmed to their football decisions (Boneau et al., 2018; Dougherty & Drumheller, 2006). These findings may explain the results of the present study in which, TPB aided in determining, parents of tackle football athletes identified both league safety and league

success as important in their decision, even though they did not know the coaches' level of training.

Limitations

Our study was delimited to parents associated with two regional youth leagues located in South Carolina. While our study had a majority of respondents that were female, which is common of survey research (Wu et al., 2022), a larger sample of male respondents may have reported different results. Future research is needed to include participants from broader demographics (i.e., socioeconomic background, sex, etc.). Including more participants from NTFLs, YFLs in different regions or levels, or parents with children in other sports will allow future research to provide an understanding of parents' decision-making process across a more representative sample. Expanding the sampling of future studies would likely improve the issue of small effect sizes reported in the present study. Another limitation of this study is that we did not fully assess parents' concern related to other health related issues, such as sprains, strains, or other medical emergencies (i.e., heatstroke, sudden cardiac arrest, etc.).

Management Implications

This study found significant differences between parents who would not let their child participate in tackle football and those who would. The variables found to influence these decisions using the TPB included both health- and league-related factors. The health factors found to have an influence on these decisions were the child's potential risk of injury, CTE, and risk of concussion. While the league-related influences on the decisions were coaches' level of training, reputation of the leagues' safety, and reputation of the leagues' success. To ensure parents have reliable and accurate information to base their decision, when enrolling their children, youth football leagues need to consider policy and procedure development in these health-related areas. Through the implementation of coaching education programs and maintenance and review of knowledge on safety policies, youth leagues improve the safety of their athletes and appeal to parents' league choice decisions. Additionally, the advertisement of coaching safety certifications and the creation of parent education materials may help leagues positively impact the weighting of factors when parents make their league choice decisions.

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