ATHLETES FROM FOOTBALL BOWL SUBDIVISION SCHOOLS PERCEPTIONS OF SPORT SPECIALIZATION AND ITS RELATIONSHIP WITH PERFECTIONISM

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This dissertation is dedicated to my family. To my Mom and Dad, thank you for being there for me in both the good and the bad times. You have instilled the virtues of generosity, integrity, genuineness and hard work. I will carry on your virtues you have ingrained in me to whatever future endeavors life might take me. To my brother Scott, your mentorship has shown me the result of hard work, passion, and dedication can get me to anywhere that I may desire. If it was not for your support through this journey, I am not sure that I would have been able to complete this dissertation.

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ABSTRACT

Sport specialization is an emerging trend amongst athletes today who are looking to gain an advantage over the competition. However, little research has been conducted to evaluate the psychological consequences of sport specialization. The purpose of the study was to investigate the effect that sport specialization has on perfectionism. Additionally, this study examined if specializing in sport had any long-term consequences by investigating the time in which someone specializes in sport and its relationship with perfectionism.

Student-athletes (N = 393) from Football Bowl Subdivision schools participated in the in the study. Multiple-hierarchical analyses were conducted to investigate the degree in which an athlete engages in sport specialization and the relationship with perfectionistic strivings and perfectionistic concerns. The analyses indicated that student-athletes who are highly specialized were more likely to develop perfectionistic concerns whereas moderate and low sport specializers did not have a relationship with perfectionistic concerns. Results of the analyses also indicated that specializing in sport had no relationship with the development of perfectionistic strivings. The results indicate that there are potential negative psychological consequences for athletes who specialize in sport. Further research is warranted.

In addition, one-way ANOVA's were conducted to see if the time in which athletes specialized in a sport had any relationship with perfectionistic strivings and perfectionistic concerns. Results of the analyses indicated that the time in which someone

specialized in a sport did not have a relationship with perfectionistic concerns or perfectionistic strivings. The results indicate that sport specialization does not have many longitudinal repercussions, at least psychologically. It seems that any psychological repercussions are confined to the time, and more importantly the degree in which one is engaging in sport specialization.

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CHAPTER I: INTRODUCTION

The role and purpose of youth sport have undertaken a transformation in recent years. The traditional view of youth sport participation was that it was a child-driven, recreational activity that one participated for enjoyment. However, this is no longer the case, as youth sport participation is now parent-driven, highly structured and consisting of deliberate practice with the specific purpose of developing sport-specific skills (Caine, Maffulli, & Caine, 2008; Jayanthi, Pinkman, Dugas, Patrick, & Bella, 2012). This emphasis on skill development is ultimately aimed at achieving the highest levels of athletic success (Malina, 2010) and developed in response to the continuing polarization of successful athletes and the benefits they enjoy (Vaeyens, Güllich, Warr, & Philippaerts, 2009; Wiersma, 2000). As a result, there is a belief amongst coaches, parents, and athletes that in order to achieve athletic success it is imperative that young athletes specialize in one sport. While coaches and parents are often the proponents of sport specialization, it is a point of contention amongst practitioners and researchers, many of whom oppose early sport specialization. Opponents to sport specialization have expressed concerns that are related to physical well-being such as an increased risk of overuse injuries, to psychological consequences such as increased stress, social isolation, and burnout. This begs the question, is sport specialization an adaptive or maladaptive behavior for youth to participate in? Moreover so, what are the negative or positive ramifications of specializing in sport?

Sport specialization is a relatively new area of inquiry. Sport specialization is

defined as “intensive year-round training in one sport at the exclusion of other sports” (Jayanthi, Pinkham, Dugas, Patrick, & Labella, 2013). Sport specialization has garnered an influx of attention recently because of the increasing trend of young athletes who are specializing in one sport over the past 15 years (Feeley, Agel, & LaPrade, 2016).

There is a myriad of factors that might explain why parents and coaches encourage early sport specialization. Proponents for sport specialization arguments include the desire to give the athlete an edge in competition, financial assistance in the form of scholarships, potential professional employment, and the labeling of kids as elite from an early onset. These perceived factors are thought of to be advantageous, thus leading to the belief amongst coaches, parents and some scholars that sport specialization is vital for success. However, there are also others who warn about the negative consequences that are associated with sport specialization.

While there is a debate amongst researchers on whether sport specialization has a positive or negative impact, what is clear is that sport specialization is on the rise and perceptions have changed in recent years. The normative perception about sport participation used to be that sport diversification, which is defined as an “athlete sampling multiple sports” (Wiersma, 2000, p. 13), was a key component for developing a well-rounded athlete. However, this paradigm has shifted in recent years to where early sport specialization has become the norm as it is believed that sport specialization is integral to the development of an elite athlete. The study by Hill and Simmons (1989) highlighted a noticeable increasing trend of sport specialization. In their study, 78% of high school athletic directors indicated that sport specialization had been increasing in the previous ten years (at the time of the study). In addition, they predicted that this sport

specialization trend would continue to increase in the future. A subsequent study conducted by Wiersma (2000) stated that there was evidence in an increase of athletes who were specializing in Olympic sport, many of whom were in their early to mid-years. A more recent study found that approximately 65% of high school athletes could be categorized as moderate to high sport specializers (Bell, Post, Trigsted, Hetzel, McGuine, & Brooks, 2016). These studies highlight the growing trend of young athletes specializing in one sport. Since we do not yet have a comprehensive understanding of the ramifications associated with sport specialization, this trend of increased sport specialization may be exposing youth athletes to many potential and unnecessary risks.

The literature on early specialization is wrought with cautionary tales about the negative consequences of sport specialization. The physical costs of early sport specialization can be particularly high. In a 2012 study, Dr. Neeru Jayanthi of Loyola University followed 1,200 young athletes. The study revealed that athletes specializing in one sport was the strongest predictor of injury, with 70-93% of athletes who specialize being more likely to be injured as compared to children who participate in sport diversification.

While physical injuries are the most commonly recognized negative consequence of sport specialization and are more readily diagnosed, the negative emotional and psychological consequences are often overlooked. One of the potential negative consequences of sport specialization that has yet to be studied is perfectionism.

Perfectionism is a complex, multi-dimensional (having both positive and negative qualities) personality disposition. Perfectionism to date does not have a universally accepted definition but researchers are in an agreement on the basic characteristics of the

dimensions of perfectionism. Perfectionism is generally accepted as when a person has exceedingly high and lofty expectations for performance placed on them, many of which are unrealistic and unattainable and accompanied by harsh critical evaluations of one's behaviors and performance (Jowett, 2013).

Traditionally perfectionism has been thought of as a maladaptive (negative) personality trait. Early research indicated that perfectionism was highly correlated with serious negative psychological consequences such as depression and anxiety (Chang, Rand & Strunk, 2000; Enns & Cox, 1999). Research has suggested that the most potentially dire consequence of perfectionism is suicide as there is strong evidence suggesting many people who commit suicide suffer from perfectionism (Hewitt & Flett, 1991). In addition to the negative psychological effects of perfectionism, research has emerged to show that perfectionism has the potential to have a long-term effect on physical well-being. These include an overall decline in physical health, fatigue, and early mortality (Dittner, Rimes, & Thorpe, 2011; Fry & Debats, 2009; Molnar, Sadava, Flett & Colautti, 2012). Being associated with such potentially dire and negative consequences perfectionism had been thought to be solely a maladaptive personality trait.

While perfectionism was traditionally conceptualized as maladaptive, this conceptualization has been changed due to the emergence of new research. The conceptualization that perfectionism could have adaptive qualities was put forth by the work of Rice, Ashby & Preusser (1996) where they suggested that previous research on perfectionism had only focused on the decrements of perfectionism. They were successful in being able to distinguish between adaptive and maladaptive dimensions of perfectionism. The possibility of perfectionism being an adaptive trait led to a

contentious debate among scholars who believed that perfectionism could only be maladaptive or if perfectionism could exhibit both adaptive and maladaptive qualities. Subsequent research affirmed that perfectionism does exhibit both adaptive and maladaptive qualities. Adaptive perfectionism is associated with an increase in self-esteem, academic achievement, and higher self-satisfaction (Ashby & Rice, 2002; Gilman & Ashby, 2003).

Contemporary researchers believe perfectionism to be a multi-dimensional trait that overlaps a wide domain of ranges. However, they believe that these domains fall in line with two higher order dimensions, perfectionistic concerns and perfectionistic strivings. The dimension of perfectionistic concerns is regarded as the maladaptive dimension of perfectionism. Perfectionistic concerns are comprised of pressures that are socially-prescribed, in which the perceived pressures are placed by others, along with "concerns over mistakes, fear of negative social evaluation, fear of discrepancy of one's expectations and performance, and negative reactions to imperfection" (Gotwals, Stoeber, Dunn & Stoll, 2012 p. 264). The higher order of perfectionistic strivings is associated with self-oriented striving, where one places the high goals on oneself intrinsically, and the setting of very high personal performance standards.

Perfectionism in Sport

Perfectionism has been long recognized by psychology researchers as a personality trait that plays an important role in the cognitive, affective, and behavioral functions of general life, but an area in research that perfectionism has received an influx

of attention in the realm of sports. Sport psychology researchers have been readily cognizant of the cognitive, affective and behavioral functions of perfectionism and have promptly studied its affect in a variety of sport settings (Gotwals, Stoeber, Dunn, Stoll, 2012). Empirical research has shown links between athletes' perfectionistic orientations and competitive anxiety in high school cross-country runners (Hall, Kerr, & Mathews, 1998), attitudinal body image in figure skaters (Dunn, Craft, Causgrove Dunn, & Gotwals, 2011) race performers of adult triathletes (Stoeber, Uphill, & Hotham, 2009) and gold medal success of Olympic athletes (Gould, Diefffenbach & Moffit, 2002) and athletic burnout (Gould, Tuffey, Udry & Loehr, 1996; Hill, Hall, Appleton & Kozub, 2008; Jowett, Hill, Hall & Curran, 2013; Madigan, Stoeber, Passfield, 2015) highlighting the need for more research.

Significance of the Study

Given the increasing number of athletes who are specializing in sport, it is imperative that researchers investigate the consequences of sport specialization. Most of the literature regarding specialization focuses on the negative physical consequences of specialization. To date, there have been relatively few studies that have thoroughly investigated the psychological repercussions of sport specialization and the affect that perfectionistic strivings and perfectionistic concerns will have on those athletes who specialize. Thus, the purpose of this study is to investigate the role of perfectionism and its relationship for those who specialize in one sport and to add to the current body of knowledge of perfectionism and sport specialization.

Delimitations

1. The participants in this study will be competitive athletes. All athletes participating in this study will be comprised of athletes from football bowl subdivision schools that compete in a variety of sports. All athletes will be attending a university in the United States. The focus of this demographic will allow for results to be generalized to the general demographic.
2. The nature of this design will be cross-sectional and retrospective in nature, thus the long-term effects of specialization and its relationship to perfectionism will not be investigated.

Limitations

1. The measures used in this study is a self-report measure. Self-reported measures are open to participation bias.
2. The measure will use cross-sectional questions along with retrospective questions.
3. The study is using a homogenous sample with all athletes coming from football bowl subdivision schools.

Assumptions

The following assumptions will be understood for this study:

1. The measures administered for this study will be self-report inventories. It is to be assumed that all participants will answer the inventories truthfully.
2. The inventories that will be administered will be valid and reliable.
3. Participants will be able to accurately recollect previous situations as needed for this study.

Research Questions

1. What effect does specializing in one sport have on an athlete regarding perfectionistic strivings?
2. What effect does specializing in one sport have on an athlete regarding perfectionistic concerns?
3. What effect does the time in which someone specializes in elementary/primary school, middle school, high school, and college have regarding perfectionistic strivings?
4. What effect does the time in which someone specializes in elementary/primary school, middle school, high school, and college have regarding perfectionistic concerns?

Hypotheses

The following hypotheses will be tested in the study:

H_1: Athletes with lower levels of sport specialization will be positively associated with perfectionistic strivings than athletes with higher levels of sport specialization.

H_2: Athletes with higher levels of sport specialization will be positively associated with perfectionistic concerns than athletes with lower levels of sport specialization.

H_3: There is a significant difference between the time in which an athlete specializes in a sport during elementary/primary school, middle school, high school, or college with perfectionistic strivings.

H_4: There is a significant difference between the time in which an athlete specializes in a sport during elementary/primary school, middle school, high school, or college with perfectionistic concerns.

Justification

Sport specialization continues to rise and as the literature indicates sport specialization comes with many associated risks with few benefits. Since there are many potential drawbacks to sport specialization and sport specialization is still a new area of research, more research is needed. One area that seems to be in dire need of research is psychosocial studies. “Studies directly linking youth sports specialization to psychosocial

outcomes are lacking" (LaPadre, Agel, Baker, Brenner et al, 2016, p. 3). Current psychosocial studies regarding sport specialization that has been conducted have focused on psychological burnout and dropout. One research area of sport psychology that has not yet been thoroughly investigated with sport specialization is perfectionism.

Perfectionism is comprised of elements of goal setting that can be oriented from other persons (perfectionistic concerns) or from the person themselves (perfectionistic strivings). Due to the inherent nature of sport specialization (parental, coaches, teammate expectations etc.), athletes may be susceptible to perfectionistic concerns. Conversely, specialized or diversified athletes may be inclined to use perfectionistic strivings to reach their goals. Most of the research on the area of sport specialization is usually retrospective and based on expert opinions. More empirical evidence is needed to be directly applied to sport specialization (Livingston, Schmidt, & Lehman, 2016). This study will aim to be one of the first to do so.

Key Definitions

1. Perfectionism- when a person has placed on them exceedingly high and lofty expectations for performance, many of which are unrealistic and unattainable, accompanied by harsh critical evaluations of one's behaviors and performance.
2. Self-oriented perfectionism-having unrealistic expectations and standards for oneself that leads to perfectionistic motivations.
3. Socially prescribed perfectionism- developing perfectionistic motivations by

significant others placing pressures on them to be perfect.

4. Other-oriented perfectionism- one places unrealistic expectations and standards for others that pressures them to have their own perfectionistic motivations.
5. Perfectionistic concerns- pressures that are socially-prescribed, in which the perceived pressures are placed by others, along with concerns over mistakes, fear of negative social evaluation, fear of discrepancy of one's expectations and performance, and negative reactions to imperfection.
6. Perfectionistic strivings- pressures that are comprised of self-oriented striving, where one places the high goals on oneself intrinsically, and the setting of very high personal performance standards.
7. Sport Specialization- intensive year-round training in one sport at the exclusion of other sports.
8. Sport Diversification- sampling or participating in more than one sport.

CHAPTER II: LITERATURE REVIEW

Organization of the Literature Review

The organization of this chapter was constructed to provide a review of the literature relevant to sport specialization and perfectionism. First, the literature of sport specialization is reviewed. This will cover the ontology of sport specialization, current trends, and the perceived benefits and risks that are associated with sport specialization. Second, the literature relevant to the perfectionism will cover the history of the construct, the theoretical concepts, measurements, definitions, and the distinction between perfectionistic strivings and perfectionistic concerns.

Ontology of Sport Specialization

The extant literature on sport specialization is in its infancy as the sport specialization is a newer research area. Since sport specialization is a new line of inquiry there are differing conceptualizations on how to define sport specialization, however, there is one definition that is most often used in the literature that we will be using for this study. For the purposes of this study, the researcher will be defining sport specialization as “intensive year-round training in one sport at the exclusion of other sports” (Jayanthi, Pinkham, Dugas, Patrick, Labella, 2013, p. 2). Using this definition, typically a highly specialized athlete will adhere to the following; (1) pick one main sport

to specialize in, (2) participate for greater than eight months in a calendar year in one sport, and (3) must quit all other sports to focus on their preferred one sport. In accordance with this definition, athletes can thus be categorized into three distinct categories; low, moderate, and high (Jayanthi, LaBella, Fischer, Paduka, Dugas, 2015).

There are a few popular ontological conceptualizations of how sport specialization has become so pronounced in contemporary sport settings. Perhaps the most popular is the so-called "10,000-hour rule." The 10,000-hour rule for sport specialization was born out of a study conducted by Ericsson, Krampe, Tesch-Romer (1993). In the Ericsson et al study, the researchers' goals were to investigate what factors predicted expert performance. Their conclusion was that expert performers were persons who from a very young age, participated in high volumes of specific, focused, skill-based practice (also known as deliberate practice) as the highest predictor of becoming an expert performer. As defined by Ericsson et al. (1993), deliberate practice is effortful training that is designed to improve a weakness. It was suggested that from the ages of 5-7, coupled with high volumes of deliberate practice (5,000-10,000 hours) typically resulted in someone becoming an expert performer. In addition, Ericsson et al proposed that there are three distinct stages that someone transitions through to become a specialist: (1) start at an early age, (2) specialize and increase participation, and (3) full-time dedication.

In congruence with the 10,000-hour rule, proponents of specialization will often believe in the Power Law of Practice (Newell & Rosenbloom, 1981). The Power Law of Practice states that learning occurs rapidly at the onset of practice, however, this rate of learning will decrease over time as practice continues. More simply, the more someone

devotes to a practice the harder it becomes to make progressive strides. Hence, the belief is that since it is easier to acquire skill and knowledge of a sport at a younger age, proponents of early sport specialization believe this sets the foundations for later development (Baker, Côté, & Abernethy, 2003).

The misconstruement of the Ericsson et al study occurs when people attempt to generalize the findings to the realm of athletics, as the Ericsson study was conducted primarily on mathematicians, musicians, and chess players, not on athletes. Despite the subjects of the Ericsson study being quite disparate in nature to athletics, the Ericsson study has infiltrated the sports world and can be cited for justification of sport specialization as some researchers have used the study as justification for their studies.

Parental involvement is potentially another reason for the increase in sport specialization. Parents have the greatest influence on their children and can be key to understanding the trend of youth engaging in sport specialization. Along with coaches, parents believe that specialization will allow the athletes to get a head start and maintain an edge over the competition. ‘‘A growing number of coaches, parents, and children believe that the best way to produce superior young athletes is to have them play only one sport from an early age, and to play it virtually year-round” (Finley, 2006). The success and polarization of prominent athletes such as golfer Tiger Woods, help contribute to parents pushing for specialization. Tiger Woods’s, story is a well-known one. Tiger Woods was introduced to the game of golf at an early age, with a dominating parent who pushed him into deliberate and rigid practice, who created a highly regulated life for Tiger through childhood into adulthood (Farrey, 2008). The dissemination of Tiger Woods’s success story, coupled with other success stories, has influenced the perception

that parents need to emulate the conditions under which Tiger Woods went through to advance their own child's success.

Financial benefit is another influence for sport specialization. A recent study conducted by the National Public Radio in 2015 highlights the parental expectations that can be placed on a young athlete for a better life for the family. According to the study, 26% of parents whose child participated in sport had personal dreams of their son or daughter becoming a professional athlete. This influence becomes more pronounced for families whose socioeconomic income was less than $50,000 when the percentage increases to 39% (Kelto, 2015).

The reality is that it is not probable for most athletes to reach the pinnacle of a sport profession. According to Kelto, roughly one in 168 high school baseball players will get drafted by a Major League Baseball team, and just one in 2,451 men's high school basketball players will get drafted by a National Basketball Association team. This belief of the difficulty for athletes to reach the professional levels is furthered echoed by the National Collegiate Athletic Association (NCAA). According to the NCAA website, in accordance with the NCAA Sports Participation and Participation Report, of the 480,000 collegiate athletes, the percentage of athletes making the major professional ranking of their sport ranged from just .9%-9.7%. When you look at the two most popular NCAA sports of college football and college basketball, it is evident of the difficulty for an athlete to reach the professional ranks. For college football, there are approximately 72,800 collegiate football participants, of which approximately 16,000 are eligible to be drafted by a major professional team in which only 256 will be drafted. This equates to only 1.6% of eligible collegiate football players making a professional team. It becomes

even harder for collegiate basketball players. Out the 4,150 eligible collegiate basketball players, only 46 will be drafted which is equivalent to only 1.1% of the subset population who will make the professional ranks (http://www.ncaa.org/about/resources/research/estimated-probability-competing-professional-athletics).

To a lesser degree, the hope of obtaining financial assistance in the form of a college scholarship is another economic perception that influences the push for specialization. However, statistics show the unlikeliness for most athletes of reaching this. "Only 22/1000 girls (2.2%) and 20/1000 boys (2.0%) participating in high school sport in 1999 to 2000 received partial or full scholarships; estimates for full scholarships were lower, 1/81 girls (1.2%) and 1/93 boys (1.1%)" (Malina, 2010, p. 365).

Another contributing factor that influences the push for sport specialization is the availability for athletes to participate in their selective sport year-round. Traditionally, sports had a cyclical season that they adhered to. The fall was a time for football, while spring was a time for baseball for example. However, this is no longer the case. The proliferation of club and travel teams in recent years provide the opportunity for athletes to play their sport year-round. Often club or travel teams will recruit youth for competing at more advanced levels of competition. This recruiting of youth occurs approximately at ages 10-12 years old and happens in a variety of sports. The sole purpose of these travel clubs is to encourage youth to participate year-round in their sport (Malina, 2010).

Perceived Benefits and Risks Associated with Sport Specialization

As mentioned earlier, there is a contentious debate on whether sport specialization is a positive or negative behavior for athletes to engage in. There are possible benefits and risks that are associated with sport specialization. The current literature on sport specialization typically places an emphasis on the negative consequences that are associated with sport specialization, while the benefits can often be overlooked (Livingston et al, 2016). The aim of this section is to provide a holistic view of both sides of the argument.

Benefits Associated with Sport Specialization

One of the most popular perceived benefits of sport specialization is the notion that sport specialization can lead to elite athletes who possess superior skills compared to their counterparts who practice diversification. In a 2012 study conducted by Ford and Williams, they postulated that success in sports was not bifurcate in success or failure, that success in sports could be thought of as on a continuum. They arrived at this based on their investigation of still-elite, ex-elite, and recreational soccer players. Based on their study they found that still-elite and ex-elite soccer players were ranked higher in deliberate practice hours as compared to the recreational players. This was significant because there was not any difference in actual competition hours between the groups, distinguishing that deliberate practice was the main factor that separated the still-elite and ex-elite soccer players from recreational soccer players. They followed up their findings

by surveying professional soccer players who were in their late teens, and former elite soccer players who were not selected to play professionally. Both groups had previously participated in sport diversification, but the professional soccer players spent more time focusing on the sport of soccer. The results also showed that the professional soccer players engaged at an earlier onset of supervised soccer practice compared to the non-professional soccer players (Ford et al, 2012).

Athletes who are driven by motivation to get better in their sport have also been shown to benefit from sport specialization. Ward, Hodges, Starkes, and Williams (2007) investigated elite-soccer athletes and non-elite athletes who began specializing in soccer at approximately the age of 16 years old. They found that elite athletes compared to non-elite athletes started engaging in soccer activities at the same age, however, elite-athletes participated in team and individual practice at an earlier age. While investing the groups' motivations for participating in soccer, it was found that the primary motivation for the elite-soccer player group was to improve their skills. This, in turn, led them to rate their time, dedication, and enjoyment higher than the non-elite group. The non-elite group stated enjoyment of soccer as their primary reason for their engagement in sport specialization.

Perceived enjoyment and skill acquisition was further proven to be a benefit of sport specialization according to Livingston et al. In their study, they surveyed the parents for reasons why they encouraged the engagement of sport specialization. The results also indicated that the parents perceived that specialization was beneficial because they believed their child athletes were improving their skills. They also noted that they perceived that their child was enjoying the sport, despite the longevity or brevity that

their child had been specialized.

Risks Associated with Sport Specialization

As aforementioned earlier, the literature is wrought with numerous risks (mental, physical and physiological) that are associated with the sport specialization.

One of the risks of engaging in sport specialization is social isolation. Engaging in sport specialization can require extensive time and commitment. This can result in isolation from age and sex peers, which may alter relationships with peers and family members, which is vital for social development during adolescence. Furthermore, there is an increase in talented young athletes in the United States who are being homeschooled and may miss opportunities for social interaction and independence (Malina, 2010).

Overdependence is another potential risk that can occur if one engages in sport specialization. As described in the polarization of Tiger Woods's success story, many of the parents of sport specialized athletes are following that model and are highly regulating the lives of elite athletes. This can result in the overdependence on others and in many cases, loss of control of what is happening in their lives. When this happens, there is a potential for elite athletes to be trapped by fame which can distort their perceptions as human beings which results in viewing themselves as commodities (Malina, 2010).

Skill acquisition and development is often associated with sport specialization. However, there is literature that contradicts this narrative as many scholars believe that sport specialization will hamper skill development. When athletes engage in sport

specialization, participants are deprived of the opportunity to participate in a diverse year-round sports season, which in turn can possibly lead to a decreased development of lifetime sports skills. These lost opportunities include such areas as fun and focused physical activity and contribute to deficiencies in current physical activity and health (Mostafavifar, Best, & Myer, 2013). This can also lead to an over reduction in motor skill development. As athletes focus on the other skills needed for this sport, they exclude other motor skills.

Athletic burnout is another potential consequence of sport specialization that can have serious ramifications. Burnout is a syndrome that is the resultant of long-term, cumulative stress (Maslach & Schaufeli, 1993). Athletic burnout is a multidimensional construct that consists of three dimensions: exhaustion, devaluation, and reduced accomplishment. Exhaustion refers to both the depletion of emotional and physical energy. Devaluation is a person having apathy or negative thoughts toward their line of work. The reduced accomplishment dimension is when an athlete develops a feeling that their efforts are not effective, negatively assess their own performance, and will potentially lose confidence in their abilities to perform (Raedeke & Smith, 2001). Sport specialization has the potential to lead to burnout. Sport environments that are conducive to burnout, are environments that are superimposed on a person, and interact with normal demands such as “growing up”, physical growth, biological maturation, and behavioral development (Malina, Bouchard, Bar-Or, 2004). In addition, burnout can occur with parents and families of those who specialize in sports. Livingston et al (2016) found that the parents experienced more burnout over time when their child engaged in sport specialization.

Ironically, one of the arguments that proponents often use for sport specialization may, in fact, carry with it an unintended consequence of dropout. As noted earlier, proponents of sport specialization often cite the Ericsson et al 10,000-hour rule of becoming an expert. One of the components of the 10,000-hour rule is deliberate practice, which is effortful training that is designed to improve upon weaknesses. However, this notion of deliberate practice is often of low inherent enjoyment. The type of training advocated for by proponents of sport specialization may be at odds with the level of enjoyment that is necessary for one to have a long-term commitment to their respective sport (Baker, et al 2003). Often lack of enjoyment is cited as the main culprit behind dropout in sport. Investigations of participants who dropout of sport (Ewing & Seefeldt, 1996; Gould, 1987; Weiss & Petlichkoff, 1989) consistently cite that overall lack of fun or enjoyment was the primary reasoning for withdrawing from a given sport. Consistently researchers have found that sport specialization had led to an increase in dropout. Swimmers who specialized early spent less time on the national team, and in fact withdrew and retired earlier as compared to those who specialized in swimming later (Butcher, Linder, and Johns, 2002). Additionally, the swimmers who dropped out reported that the main reasons for leaving the sport were psychological fatigue, general health and difficult loads. Gymnasts who specialized from an early onset from the ages of 4-16 years old reported their enjoyment of the sport was less and their overall health lower (Law, Côté, and Ericsson, 2007). Junior tennis players who burned out early had less input in their training, higher perceived parental criticism and expectations, and lower levels of extrinsic motivation (Gould, Udry, Tuffey, and Loehr, 1996). Minor league ice hockey players that dropped out of the sport started off-ice training earlier and

spent more time in off-ice training than those who continued to compete (Wall & Côté, 2007).

Injuries that are associated with sport specialization might be the most written and discussed issue as it pertains to sport specialization. Overuse injuries are a consequence of repeated microtrauma in a tendon, muscle, or bone associated with chronic repetition of specific sport activities. Many of the movements used in sports can result in overuse injuries such as tennis serving, baseball pitching, gymnastic routines and shoulder action in swimming (Malina, 2010).

Repetitive motions are not the only consequence of sport specialization that can lead to injuries. Intensive training often is something that also accompanies sport specialization that can also lead to injuries. Higher training volumes may increase risk for injury in a variety of sports. In a study of 2,721 high school athletes, it was found that intensive training that exceeded 16 hours per week increased the likelihood of injuries (Rose, Emery, and Meeuwisse, 2008). In addition, the longer athletic competitions go on has also been shown to increase the risk for injuries. Studies have shown that tennis players were more than likely to take a medical withdrawal in national tennis tournaments after they played more than five matches per year in supernational tournaments (Jayanthi, O'Boyle, Durazo-Arvizu, 2009). Players who specialized in only tennis were 1.5 times more likely to report an injury (Jayanthi, O'Boyle, Durazo-Arvizu, 2009). Furthermore, a 10-year prospective analysis was conducted of 481 youth baseball pitchers (9-14 years old) found that those who pitch more than 100 innings per year were 3.5 times more likely to be injured (Fleisig, Andrews, and Cutter, 2011) and increased odds for shoulder or elbow surgery if one pitches for more than eight months per year

(Olsen, Fleisig, and Shouchen, 2006). Age might be a contributing factor to injury risk. Higher rates of injury were found for athletes who were older than 13 years of age and those who compete at high competitive levels (Emery, 2003).

Does Sport Specialization Lead to Competitive Success?

One of the biggest debates with sport specialization is whether sport specialization is a requirement to reach success. When reviewing the literature, except for a few select situations, it showed that sport specialization is not necessary for success in sports.

As discussed earlier, probably one of the greatest reasons for specialization to proliferate the literature and make it part of the norm for sport settings is the Ericsson et al study. Ericsson stated that for someone to master a sport, they needed to engage in deliberate practice for 10,000 hours, and the early onset of engaging in deliberate practice would benefit those compared to their counterparts who started later. While it is true that deliberate practice is needed for athlete development, there is not any consistent evidence that athletes who engage in specialization are that much more successful. Very few sports benefit from specialization where sport specialization is essentially required, such as women's gymnastics, diving, women's basketball, figure skating and dance where peak performance generally occurs before full body maturation.

Generally, research shows that athletes who engaged in diversification were more likely to have sporting success. For instance, a survey was conducted on 376 Football Bowl Subdivision intercollegiate athletes where the results indicated that 17% of those

athletes participated exclusively in their current respective sport. The other 83% of the college athletes indicated that they had simultaneously participated in other sports and that their first sporting experience was in a different sport than their current sport. Swimming was the only exception (Malina, 2009).

Experts in the field agree that diversification is valuable for athletic development. Diversification provides opportunities to develop more skills that will be necessary for athletic success. Among high-level athletes, the greater number of athletic events they engaged in during their developing years (ages 0-12), the less specialized sport training was necessary to learn the high-level skills in their sport (Baker et al, 2003). It is the opinion of experts that early diversification followed by specialization in later adolescence lead to more enjoyment, fewer injuries, and longer participation (Baryina & Vaitsekhovskii 1992; Gould et al, 1996; Wall & Côté 2007) which ultimately will be more conducive to overall sport success (Jayanthi, Pinkham, Dugas, Patrick & LaBella, 2012).

The Developmental Model of Sport Participation

Researchers studying sport specialization have put forth a few models to help conceptualize sport specialization and the underlying processes associated with it. The most prominent of these models is the Developmental Model of Sport Participation (DMSP). Developed by researcher Jean Côté (1999), the Developmental Model of Sport Participation is based on theoretical and empirical data that has been researched and refined since its inception. The Developmental Model of Sport Participation (DMSP) is a

model that describes pathways processes and outcomes associated with sport development throughout childhood and adolescence. The model suggests three stages of development that athletic youth undertake. The first phase is called the sampling phase that occurs between the ages of 6-12 years of age. In this stage, children are provided with an opportunity to sample a variety of sport, whereby they develop the foundations of basic movement skills and experience sport as a source of fun and excitement. Development from this sampling stage can take one of three forms; children become more involved more seriously in one or two sports, children can choose to stay involved in sport as a recreational activity, or children can withdrawal from sport entirely. The second stage of the DMSP is the specializing phase which occurs between the ages of 13-15 years of age. Children in this stage begin to focus on a lower number of sports. While fun and enjoyment are still crucial features of their participation, sport-specific specialization starts in this phase. During this stage children can take three routes; continue participating in sport as a recreational activity, they can progress to the investment stage, or drop out. The last stage is the investment phase which occurs at 16+ years of age. During this stage, the athlete becomes committed to high-performance goals in a specific sport where strategic, competitive and skill development are the primary focus. During this stage, athletes can progress to higher levels of performance, move to recreational sport, or dropout. Additionally, the DMSP has seven postulates. Figure 1 shows the DMSP.

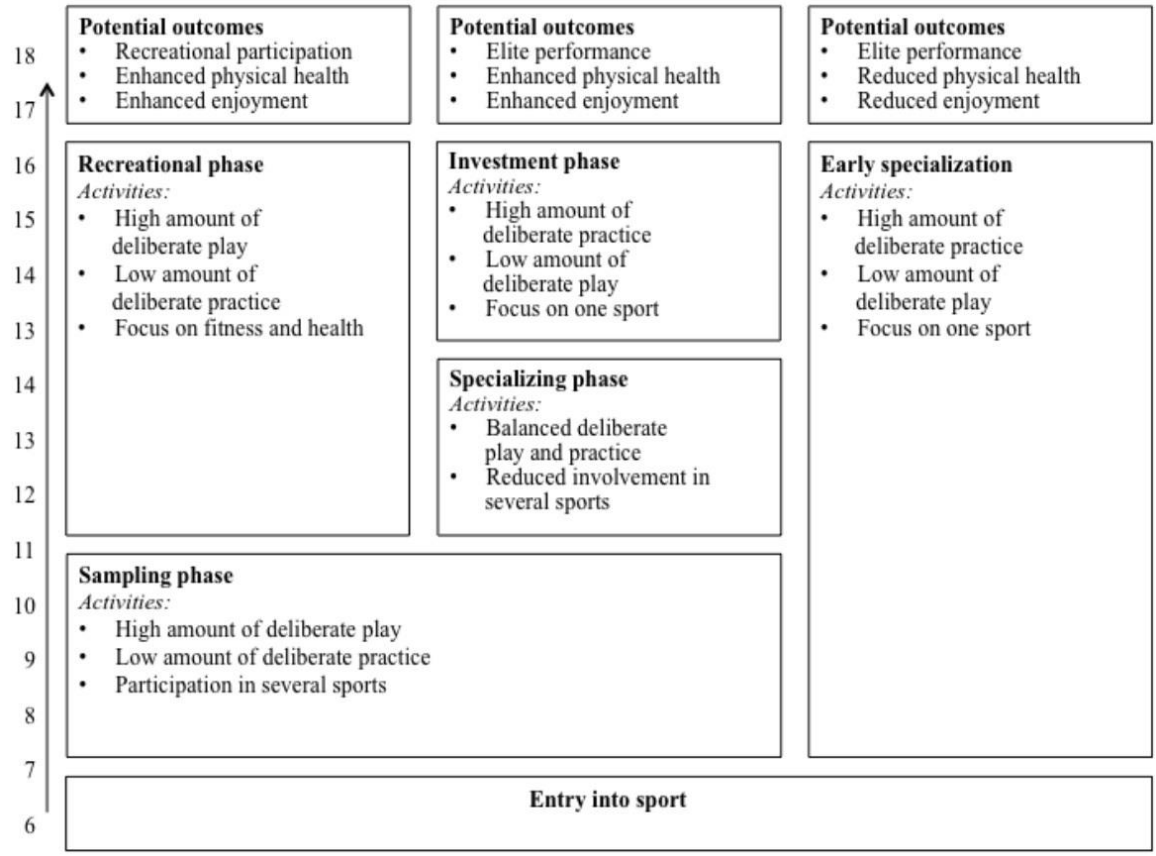

Figure 1. *The Developmental Sport Participation Model adapted from Côté & Hay, 2002; Côté & Fraser-Thomas, 2007.*

The Seven Postulates of the Development Sport Participation Model

In response to the current trend of sport specialization in 2009, the International Society of Sport Psychology (ISSP) issued a stance on sport specialization (Côté, Lindor & Hackfort, 2009). The main purpose of the ISSP stance was to emphasize the development of a complete athlete with a range of skills with minimizing dropout. It is

clear from the postulates that their stance was in favor of early diversification as opposed to early sport specialization. The model creates pathways for one to follow to become an elite athlete. The seven postulates are stated and summarized below.

(1) Early sport diversification does not hinder elite sport participation in adulthood. In fact, research shows that many top athletes engage in sport diversification before they decide upon their main sport (Capranica & Millard-Stafford, 2011). This is particularly true for athletes in disciplines where peak performance happens typically in the late 20's and 30's (Baker et al., 2005; Moesch, Elbe, Hauge, & Wikman, 2011).

(2) Early sport diversification is associated with a longer career and long-term sport involvement. There is evidence that athletes who specialize earlier will experience more burnout and dropout. (e.g., Barynina & Vaitsekhovski, 1992; Gould et al, 1996; Fraser-Thomas, Côté, & Deakin, 2008; Wall & Côté, 2007).

(3) Early sport diversification allows young people to participate in a wide range of contexts. A diverse experience in different sport and non-sport contexts contribute to developing personal, psychological and social skills making for a positive youth development (Gould & Carson, 2004). It is believed that a diverse experience will help youth adapt to different environments and situations, both on and off the field.

(4) Deliberate play builds a strong foundation for intrinsic motivation and intrinsic self-regulation. In accordance with self-determination theory, people who freely (autonomy) choose their decisions are more motivated to continue their involvement in their selective sport (Ryan & Deci, 2000). Youth who voluntarily engage in sport diversification will be more suited to make a conscious decision and self-regulated investment about the sport they chose to specialize in if they choose to do so. As a result,

they are more likely to have continued participation and investment in their selective sport (Côté et al., 2009; Wall & Côté, 2007).

(5) Range of skills learned outside of the main sport may be later successfully applied across sports. The postulate here is that what is learned in one sport can be transferable to another sport. Transferable skills, therefore, give a competitive advantage to the athlete who participated in both. Transferable skills may involve both motor and cognitive skills (Baker, 2003).

(6) Approximately at age 13 young athletes should have an opportunity to specialize in their favorite sport or continue recreational participation**.** Having the opportunity to engage in diversification, they should have the opportunity to specialize in sport around the ages of middle school. The shift from participating in play to training should be a gradual transition. Coaches and parents should be responsible for making this transition a smooth process (Fraser-Thomas et al, 2008).

(7) In late adolescence (16+) it is time to highly specialize in one sport. Once the athlete has reached late adolescence, it is acceptable for the athlete to specialize in one sport. A large amount of investment will be required, which usually involves high intensity, all-year training.

Over time the seven postulates have been thoroughly researched. Jean Côté and Matthew Vierimaa (2014) released a research article focusing on the seven postulates. Fifteen years after the original inception of the DMSP model, they believe many of the postulates to be very strong. These were playing many different sports at a young age does not hinder elite sportspeople later in life, encouraging deliberate play in youth sport will improve performance outcomes and long-term participation in sport, specializing in

one sport should not happen before the age of 13, and involvement in multiple sports at an early age will encourage long-term participant in sport. Two of the postulates needed further research to affirm their conclusions; sport programs that encourage playing many different sports at a young age do not necessarily create the condition for positive youth development, and that a transition to full training commitment to one sport should not necessarily wait until after 16 years of age.

The History of Perfectionism

One of the areas of that has garnered increased attention in research is the multi-dimensional personality trait of perfectionism. Contemporary researchers have defined perfectionism as having "a commitment to exceedingly high standards combined with a tendency to critically appraise performance accomplishments" (Frost, Marten, Lahart, & Rosenblate, 1990; Hewitt & Flett, 1991).

Researcher D. Hamachek (1978) argued that those who suffer from perfectionism tended to fall into two types of categories, neurotic and normal perfectionism that varied by the degree in which one pursued perfection. According to Hamachek, normal perfectionism is where a person is more inclined to pursue perfectionism without sacrificing their self-esteem and would derive pleasure from their pursuit. Conversely, neurotic perfectionists are more inclined to strive for unrealistic, unattainable goals, and feel a great sense of displeasure and anxiety when they are not able to reach their unrealistic goals. The important distinction between normal and neurotic perfectionists is

the self-worth that they gain from their accomplishments. Normal perfectionists have the capacity to set performance boundaries while neurotic perfectionists are incapable of doing so. By establishing performance boundaries, normal perfectionists have the ability to understand their own strengths and weaknesses in various domains, allowing to focus their efforts on doing what is right. Contrarily, neurotic perfectionists are incapable of setting healthy performance boundaries and thus become obsessive with their accomplishments. Neurotic perfectionists set unrealistic and high expectations that they are unlikely to achieve. Neurotic perfectionists are rarely satisfied with their performances, focusing on the negatives of their performances and will never be satisfied with accomplishing standards. This compulsive focus on what are they doing wrong turns in a cyclical pattern that is self-defeating of setting unreachable goals and standards and not being able to obtain them. An alternative approach researchers have used to investigate perfectionism was the approach developed by Hewitt and Flett (Jowett, 2013). In this approach, there are three primary dimensions of perfectionism; socially-prescribed perfectionism, self-oriented perfectionism and other perfectionism. Socially-prescribed perfectionism is internally processed perceptions that others hold unrealistically high standards for oneself, experience external pressures to be perfect, and believe others judge them critically. Socially-prescribed perfectionism is considered to be maladaptive perfectionism. In contrast, self-oriented perfectionism is an internal drive to adhere to exceedingly high personal standards, strive for perfectionism, expect to be perfect, and are highly self-critical if they do not meet expectations. Self-oriented perfectionism is considered to be an adaptive trait. Other-oriented perfectionism is comprised of beliefs that it is important for others to strive for perfectionism. Other-oriented perfectionists

expect others to be perfect and will harshly criticize others who do not meet their standards which differs from self-oriented and socially prescribed perfectionism which encompasses elements of a person being self-critical of their performance.

Another approach that has been used to conceptualized perfectionism was put forth by Frost, et al (1990). In this approach, there are six dimensions of perfectionism, with four internal perfectionistic tendencies which are generally termed high personal standards in which an individual places excessive demands on oneself followed by self-evaluation, often which is excessively critical. The other two are external perfectionistic tendencies which are regarded as concerns over mistakes, in which they believe that mistakes are akin to failure and that others will lose respect for them.

In a narrative review of perfectionism, Stoeber (2011) suggested that perfectionism should be categorized over two higher-order dimensions, perfectionistic strivings and perfectionistic concerns. Perfectionistic strivings deal with the aspects that are self-oriented striving and setting high personal performance standards. Perfectionistic concerns deal with those aspects that are concerns over making mistakes, fear of negative social evaluation, feelings of discrepancy between one's expectations and performance, and negative reactions to imperfection. This approach was used in subsequent narrative reviews that were specifically tailored for sport perfectionism (Gotwals et al 2012). Subsequent researchers have continued to adopt this sentiment of perfectionism research pertaining to these two higher orders of perfectionism.

Perfectionism Scales

Originally, three perfectionism scales were established to measure the dimensions of perfectionism; Frost Multidimensional Perfectionism Scale (Frost et al 1990), Multidimensional Perfectionism Scale (Hewitt & Flett, 1991) and the Sport Multidimensional Sport Scale-2 (Gotwals & Dunn, 2009). However, due to the emergence of the significance of studying the higher orders of perfectionistic strivings and perfectionistic concerns, researchers have put an emphasis on using different elements from each scale to adequately capture perfectionistic strivings and perfectionistic concerns (Stoeber 2011, 2014)

Multidimensional Perfectionism Scale

Hewitt & Flett (1991) devised another Multidimensional Perfectionism Scale (MPS), a 45-item measure that rates three aspects of perfectionistic self-presentation: self-oriented perfectionism, socially prescribed perfectionism and other perfectionism. Self-oriented perfectionism is defined as having unrealistic expectations and stands for oneself that leads to perfectionistic motivations. Socially prescribed perfectionism is defined as developing perfectionistic motivations by significant others placing pressures on them to be perfect. Other-oriented perfectionism is when one places unrealistic expectations and standards for others that pressures them to have their own perfectionistic motivations.

Sport Multidimensional Perfectionism Scale

In 2002, Jo. Dunn, Ja. Dunn, & Syrotuik developed a multidimensional perfectionism scale that would adequately capture the dimensions of perfectionism for sport. While most researchers believe that perfectionism is a global personality construct, there are dissenting perfectionism theorists who propose that perfectionism is domain specific, that perfectionism will manifest itself in very specific areas of a person's life (Missildine, 1963; Shafran, Cooper, & Fairburn, 2002). Research suggested that athletes have higher rates of perfectionism in the context of sport as compared to general-life and school settings (Dunn, Gotwals, C. Dunn, 2005; Anshel & Eom, 2003) The Sport Multidimensional Perfectionism Scale is comprised of four dimensions; Perceived Parental Pressure (PPP), Concerns of Mistakes (COM), Personal Standards (PS) and Perceived Coaching Pressures (PCP). The measure showed to be an appropriate scale to measure intrapersonal and interpersonal dimensions of perfectionism in sport (Jo. Dunn, Ja. Dunn, Gotwals, Vallance, Craft, & Syrotuik, 2006).

Combined Scales

As mentioned earlier, researchers are beginning to take elements from different scales and combining them to measure perfectionistic strivings and perfectionistic concerns. To capture perfectionistic concerns, three subscales have been used. They were the eight-item concern over mistakes subscale ("I fail in competition; I feel like a failure as a person") and the six-item doubts about actions subscale ("I usually feel unsure about

the adequacy of my pre-competition practices") from the Sport Multidimensional Perfectionism Scale-2 (Gotwals & Dunn, 2009) and the five-item socially prescribed perfectionism subscale ("People expect nothing less than perfection from me") from H-MPS. Two subscales were used as indicators of perfectionistic strivings. These are the seven-item personal standards subscale ("I hate being less than the best at things in my sport") from the SMPS-2 and the five-item self-oriented perfectionism subscale ("One of my goals is to be perfect in everything I do") from the H-MPS.

CHAPTER III: METHODOLOGY

The purpose of this study is to quantitatively investigate the relationship between sport specialization and perfectionism. For this study, Football Bowl Subdivision athletes were recruited. They were asked to complete an online, self-report survey. Approval from the University Internal Review Board was granted before the conduction of the study.

Participants

Data used in the study (N = 393) were collected from 63% (N = 249) female and 37 % (N = 146) male Football Bowl Subdivision athletes. Their ages ranged from 18-25 years of age (M = 20.21, SD = 1.36). Participants were recruited by email that outlined the nature of the study, the average participation time along with a statement that outlined that participation in the study was strictly voluntary and that they could stop participating at any time during the study if they chose to exercise that right. All participants were given a link to an online survey that was available at Surveymonkey.com. In order to secure consent, participants had to indicate that they had read all of the Internal Review Protocols that included; the Researcher's Disclosure that outlined the purpose of the study, what participants would be asked to do, how many times they needed to participate, and the risks associated with participation in the study, what will happened to the data after collection, what would happen if they chose to stop participating in the study, and whom to contact if they had questions regarding the study. Informed consent was acquired as per the requirements of the Internal Review Board Informed Consent

protocols as participants initialed that they were willing to participate in the study.

Inclusion criteria for the study were as follows; all participants must be enrolled on a Football Bowl Subdivision athletic team and that they had to be on the team in the most recent academic year of 2016-2017.

The exclusion criterion for the study were that participants had to complete the survey except for missing only one question in the survey. Based on the criterion, 69 of the participants who did not complete the study within the parameters were excluded.

To reduce homogeneity of the population, athletes were recruited from different Football Bowl Subdivision schools and different conferences. Athletes were recruited from Massachusetts, Virginia, South Carolina, California, Alabama, Florida, Arkansas, Connecticut, Michigan, Tennessee, and Ohio.

Instrumentation

Perfectionism: As aforementioned earlier, in accordance with the suggestions put forth from Stoeber (2011, 2014) multiple measures were utilized to measure the higher orders of perfectionistic striving and concerns. Components from two perfectionism inventories were combined as done in previous studies. Additionally, all the questions were put on a 7-point Likert-Scale. The combined measures reported a reliability of α =.892. Permission to use the Multidimensional Perfectionism Scale (Sport-MPS-2) was granted by the creators before the onset of the study.

Perfectionistic Concerns: As noted earlier, perfectionistic concerns deal with those aspects that are concerns over making mistakes, fear of negative social evaluation,

feelings of discrepancy between one's expectations and performance, and negative reactions to imperfection. To accurately access these components, three subscales were used for indicators of perfectionistic concerns. Two subscales from the Sport Multidimensional Perfectionism Scale (Sport-MPS-2, Gotwals & Dunn, 2009) will be used. To measure concerns over mistakes, the eight-item concerns of over mistakes subscale (e.g. "If I fail in competition I feel like a failure are a person") were used. To measure the participants' feelings of discrepancy between one's expectations and performance the six-item doubts about actions subscale (e.g., "I usually feel unsure about the adequacy of my pre-competition practices.") The Hewitt and Flett (1991) Multidimensional Perfectionism Scale (H-MPS) was used to assess the fear of negative social evaluations. This is comprised of its fifteen-item socially prescribed perfectionism subscale (e.g., "People expect nothing less than perfectionism from me.") from the Hewitt and Flett (1991) Multidimensional Perfectionism Scale (H-MPS).

Perfectionistic Strivings: Perfectionistic strivings deal with the aspects that are self-oriented striving and the setting high personal performance standards. To measure the higher order of perfectionistic strivings, two subscales was used utilized from the Sport Multidimensional Perfectionism Scale (Sport-MPS-2) and the Hewitt & Flett Multidimensional Perfectionism Scale (H-MPS) also. To measure self-oriented perfectionism, the five-item self-oriented perfectionism subscale (e.g., "One of my goals is to be perfect in everything I do") from the H-HMPS was be used. To measure the high professional performance standards, the seven-item personal standards subscale (e.g., "I hate being less than the best at things in my sport.") from the S-MPS-2 was used. Evidence has been provided to support the internal consistency (H-MPS, $\alpha \geq .79$; SMPS,

$\alpha \geq .74$) of the subscales (Cox, Enns & Clara, 2002; Gotwals, Dunn J.G, Dunn, J.C., & Gamache, 2010).

Sport Specialization: Unbeknownst to this researcher, there is not a measure that has been tested for reliability and validity that measures sport specialization. However, in accordance with prior research (Bell, Post, Trigsted, McGuine & Brooks, 2016; Jayanthi, LaBella, Fischer, Pasulka, & Dugas, 2015), a self-perceived questionnaire was utilized for this study. The questionnaire will consist of a three-point scale classification method. These three questions have been developed from the definition of sport specialization as "year-round intensive training in a single sport at the expense of exclusion of other sports." The three questions consist of "Have you quit other sports to focus on one sport?", "Do you train more than eight months out of the year in one sport?", and "Do you consider your primary sport more important than others?" A categorical classification system will be used to assess the sport specialization questions (yes = 1, no = 0), with a score of 3 considered high specialization, a score of 2 considered moderate specialization, and a score of 0 or 1 considered low specialization. In addition to the questionnaire described above, participants were asked about their previous sporting experiences. Participants were asked if they had participated in diversification by participating in more than one sport during three different time periods. Based on their answers, participants were classified as either early, middle or late specializers.

The measure reported a reliability of $\alpha = .552$. As Salkind (2010) notes, a homogeneous sample can reduce alpha (p. 161). Since this sample is very homogenous, the alpha may have been reduced.

Additional Protocol

Additionally, athletes were asked at what time they specialized in their primary sport based on the school period. Athletes were asked if they played any other sport other than their primary sport during elementary/primary school, middle school, or high school in order to see when the athletes specialized. These time periods were chosen because their ages are in close proximity to the theoretical framework that Côté used in the Developmental Model of Sport Participation (DMSP). Côté's model focuses on three distinct time periods; sampling (6-12 years old), specializing (13-15 years old) and investment (16+ old). Furthermore, since the information is retrospective in nature, the researcher felt that general school time periods would be accurate compared to asking participants to retrospectively recall specific ages of which they might have specialized in a sport.

Procedure

Before the onset of the study, approval from the University's Internal Review Board was granted. A pilot study was conducted before the data collection. The pilot study had two purposes, the first purpose was to gain assurance that the directions and procedures were clear and easy to understand for potential participants. The second reason for the pilot study was to get an average time for the completion of the study. Voluntary participants (N = 32) in the study had an approximate average of eight minutes

completion rate of the study. This information was parlayed into the solicitation emails of potential participants. The next procedural step was that solicitation emails were sent to the target population of Football Bowl Subdivision athletes.

Design

This study will employ multiple hierarchal regression analyses to determine the extent to which sport specialization can predict perfectionistic strivings and perfectionistic concerns. There are suggested advantages to using a within-subject analysis. The most commonly cited benefit is the minimization of within-group error attributable to individual differences (Thomas & Nelson, 2001). Unlike designs which test two different groups of participants or use a matched-pair sampling criterion, within-subject design guarantees that participants in each treatment are identical on a number of characteristics. Additionally, a set of one-way ANOVAs will be used to access the association with the time in which someone specialized in a sport with perfectionistic strivings and perfectionistic concerns.

Variables

Dependent Variables: Perfectionism is the dependent variable for this study. Respondents were asked to complete a survey that measures their perfectionistic strivings and their perfectionistic concerns.

Independent Variables: The independent variable for this study is sport specialization. Participants were asked to complete a survey that places participants into three distinct sport specialization categories; high, moderate and low. Additionally, the time in which one specialized in sport is an independent variable.

Predictor Variables: Categorical control variables will be used for this study. These will include gender (male and female), age, and the number of years played and the specific sport they play.

Data Analysis

Power Analysis: A priori power analysis was conducted before the onset of the study using G*power 3.1.92. The program allows the researcher to specify the type of analysis that will be run as well as known value needed to compute the power of the desired analysis. Power, by definition, is the ability to find a statistically significant difference when the null hypothesis is false. The power analysis was set to achieve a 95% power level, while the alpha level was set at 0.05 to control for Type I error. Moreover, a small Cohen's effect size f^2 of 0.05 was selected to statistically detect small yet important effect sizes based on the guidelines (.02 small, .15 medium, .35 large) as suggested by Cohen (1988). Therefore, with five predictor variables (sport specialization, age, gender, years played, and sport) it was calculated that a sample size of 402 would be needed. The current study had 393 participants which is within proximity of the target goal. For this reason, power was sufficient to be able to detect significant associations if they existed.

Data Collection: A link to a web-based questionnaire was emailed to the target

group. Before beginning the questionnaire, the athletes were informed about the intent and aim of the research project, all data would be treated with confidentiality and that participation is voluntary.

Data Analysis: All data was assessed with IBM SPSS Statistics. Multiple hierarchal regression modeling and One-way ANOVA was employed for this study.

Missing Data: In the cases retained for the final analysis (N = 393), 69 of participants had more than 1 missing responses on the seven-item Likert-Scale that measured perfectionism. Out of the 393 participants in the study, 45 of them were missing one item and were included in the final analysis while others were missing more than one item and were excluded. To calculate the missing data for those were who included, expectation maximization algorithm was used. Expectation maximization imputation is available in SPSS software and was used for the analysis.

Expectation Maximization is an interative procedure in which it uses other variables to impute a value (expectation) that is most likely (maximization). It will re-impute values until it reaches the most likely value.

Expectation Maximization imputations are suggested to better than mean imputations, especially for regression, because it preserves the relationship with other variables. This approach was deemed appropriate as the missing data for the individual responses were very small (approximately 3%).

CHAPTER IV: RESULTS

Descriptive Statistics of Study Variables for Research Question I

Data analyses involving multiple hierarchical regression of the independent variable of sport specialization in conjunction with five predictor variables were computed using SPSS Version 15.0. Out of 462 initial respondents, 69 respondents were dropped for lack of numerical data on one or more variables dropping the total number to 393 total respondents. Table 1 is a description of the study variables based on the means and standard deviations obtained for all the variables used in the regression analysis. The distributional properties of all the variables indicate that all the variables are less than 10 standard deviations above the mean. Hinkle, Wiersma, and Jurs (2003) noted that a large standard deviation suggests a large amount of variability of measurements around the mean indicating that there was a high level of variability in respondents' answers. For the first analysis, the variables show little variability of distribution around the mean.

Table 1.

Descriptive Statistics of Perfectionistic Strivings, Sport Specialization, Gender, Years Played, and Individual Sport

Variable	Mean	Std. Deviation	N
Perfectionistic Strivings	63.59	9.61	393
Low Sport Specialization	0.05	0.21	19
Moderate Sport Specialization	0.42	0.82	83
High Sport Specialization	2.23	1.32	291
Age	20.20	1.36	393
Years Played	12.09	3.88	393
Female	0.63	0.48	249
Male	0.73	0.97	144
Baseball	0.07	0.26	28
Basketball	0.17	0.55	33
Cross Country	0.15	0.64	19
Field Hockey	0.01	0.20	1
Football	0.37	1.31	29
Golf	0.41	1.52	26
Gymnastics	0.46	1.74	26
Lacrosse	0.49	1.91	25
Soccer	0.89	2.67	38
Softball	0.53	2.25	21
Swimming	2.03	4.27	73
Tennis	0.18	1.47	6
Track & Field	0.99	3.60	32
Wrestling	0.31	2.12	8
Volleyball	1.13	4.11	28

Findings on Research Question I

The predictive relationship between each predictor variable and perfectionistic strivings, which addresses research question I, is summarized in Tables 2 and 3. Table 3 addresses research question I and its corresponding hypotheses using primarily the F test of R_2 which accessed the unique predictive utilities between each predictor variable and perfectionistic strivings while controlling for sport specialization. The ΔR_2, which assessed whether a predictor variable resulted in a statistically significant increment in predictive utility or whether it reduced the prediction errors, was also used. Research question 5 assessed the unique contribution of each of the five predictor variables in predicting perfectionistic concerns as measured by the type of sport specialization. The corresponding null hypothesis is that each of the five predictor variables has a regression coefficient that equals zero and, as a result, there is no statistically significant relationship between each of the predictor variables and sport specialization and perfectionistic concerns.

Table 2.

Results of the Multiple Hierarchal Regression of Perfectionistic Strivings, Gender, Years Played, and Individual Sport while Controlling for Sport Specialization.

Model	Variable	Unstandardized Coefficient		Standardized Coefficient	t	P	F	R2	ΔR2
		B	SE	B					
1						0.532	0.633	0.003	0.003
	Moderate Specialization	-0.075	1.224	-0.006	-0.062	0.951			
	High Specialization	0.374	0.760	0.051	0.492	0.623			
2						0.074	2.330	0.018	0.014
	High Specialization	0.329	0.755	0.045	0.435	0.664			
	Moderate Specialization	-0.176	1.217	-0.015	-0.144	0.885			
	Age	-0.849	0.355	-0.120	-2.389	0.017			
3						0.090	2.028	0.020	0.003
	High Specialization	0.315	0.755	0.043	0.417	0.677			
	Moderate Specialization	-0.171	1.217	-0.015	-0.141	0.888			
	Age	-0.942	0.366	-0.133	-2.574	0.010			
	Years Played	0.136	0.128	0.055	1.060	0.290			
4						**0.001	4.310	0.053	0.032
	High Specialization	0.440	0.744	0.060	0.591	0.555			
	Moderate Specialization	0.041	1.200	0.003	0.034	0.973			
	Age	-1.050	0.362	-0.149	-2.903	0.004			
	Years Played	0.144	0.126	0.058	1.140	0.255			
	Male	1.798	0.495	0.180	3.630	0.000			
5						**0.003	2.233	0.097	0.044
	High Specialization	0.736	0.771	0.101	0.955	0.340			
	Moderate Specialization	0.417	1.235	0.035	0.338	0.736			

Table 2 (cont.).

Model	Variable	Unstandardized Coefficient		Standardized Coefficient	t	P	F	R2	ΔR2
		B	SE	B					
	Age	-0.983	0.381	-0.139	-2.583	** 0.010			
	Years Played	0.033	0.172	0.013	0.189	0.850			
	Male	0.884	0.652	0.089	1.356	0.176			
	Baseball	4.764	2.903	0.128	1.641	0.102			
	Basketball	1.201	1.234	0.069	0.974	0.331			
	Cross-Country	-0.058	0.904	-0.004	-0.064	0.949			
	Football	0.714	0.524	0.097	1.364	0.173			
	Golf	0.495	0.429	0.077	1.152	0.250			
	Gymnastics	0.108	0.404	0.020	0.267	0.789			
	Lacrosse	0.004	0.328	0.001	0.011	0.991			
	Soccer	-0.064	0.291	-0.018	-0.219	0.827			
	Softball	0.192	0.283	0.045	0.680	0.497			
	Swimming	-0.083	0.190	-0.037	-0.436	0.663			
	Tennis	-0.587	0.358	-0.090	-1.639	0.102			
	Wrestling	0.069	0.263	0.015	0.263	0.793			
	Volleyball	-0.186	0.153	-0.080	-1.215	0.225			

*p<.05

**p<.01

A multiple linear hierarchal regression was calculated to predict perfectionistic strivings based on sport specialization classification of low specialization, moderate specialization, and high specialization. Predictor variables of age, years played, gender, and the type of sport were also included in the models.

Table 2 shows the results of the F test for ΔR_2 were not statically significant at the .05 for all levels of sport specialization. F (2, 390) = .532, p > .05.

Analysis shows that in Step I, the entry of Moderate Sport Specialization and High Sport Specialization was not significant, R_2 = .003, *F* (2-390) = .532; p >.05 (p = .567). After Step II, the addition of age did improve the predictive ability of the model with R_2 = .018, ΔR_2 = .015, F (1, 389) = 5.709, p < .05, but the overall predictive model with the addition of age was not significant at p > .05 (p = .074). After Step III, the addition of how many years playing their primary sport did not improve the predictive ability of the equation with R_2 = .02, F (1, 388) = 1.124, p > .05 and the overall contribution to the model was not significant, p >.05. The addition of gender in Step IV did significantly improve the predictive ability of the model. While the gender of female was not significant, the gender of male was found to be significant in the predictive ability of the model R_2 = .053, F (1, 387) = 13.160, p < .05). In Step V of the model, the inclusion of individual sports did not increase the predictive ability of the model, R_2 = .097, F (13, 374) = 1.411, p > .05.

The normality assumption is checked by using histogram and corresponding p-p plot for standardize residuals. Figure 2 is the histogram of the residuals and Figure 3 is

the corresponding p-p plot for each of the four variables while controlling for sport specialization for perfectionistic strivings. A normal curve that has the same mean and standard deviation as the predictor variable overlays the histogram. The histogram is reasonably identical with the normal distribution curve suggesting that the residuals follow a normal distribution and there is not a violation of the normality assumption. The normality assumption is not breached further by the illustration of Figure 3 by the p-p plot which shows that for the plot, the residuals approximate a superimposed straight line.

Figure 4 represents the scatterplot of the standardize residuals for the predictor variables. The scatterplot obtained are randomly and evenly scattered about the line originating from the mean of the residuals and appears to form a rectangle. The linearity and homoscedasticity of the predictor variables are not compromised as Pedhazur (1997) notes that when the points appear to scatter randomly and evenly about the line that originates from the mean of the residuals and, as a result, depicts what appears to be a rectangle, the linearity and homoscedasticity of the regression are indicated. Homoscedasticity in the regression means that the variance is the same in the sample and that standard errors are not biased in the test.

Regarding research question I, it was found that we accept the null hypothesis as the results of the analysis of all three types of sport specialization; low, moderate, and high were not significant predictors of perfectionistic strivings. Secondary findings of the analysis did, however, show that the gender of male and age were significant predictors of perfectionistic strivings. Males were more likely to have higher levels of perfectionistic strivings ($B = 1.798$, $\beta = 1.80$), however this only accounts for about 3% variance ($\Delta R_2 = .032$) in the model. In addition, it was found that as participants in the

study got older in age (B = -.1.05, β = -.149) they would more than likely have less perfectionistic strivings. However, this only accounts for about 1% variance (ΔR_2 = .014).

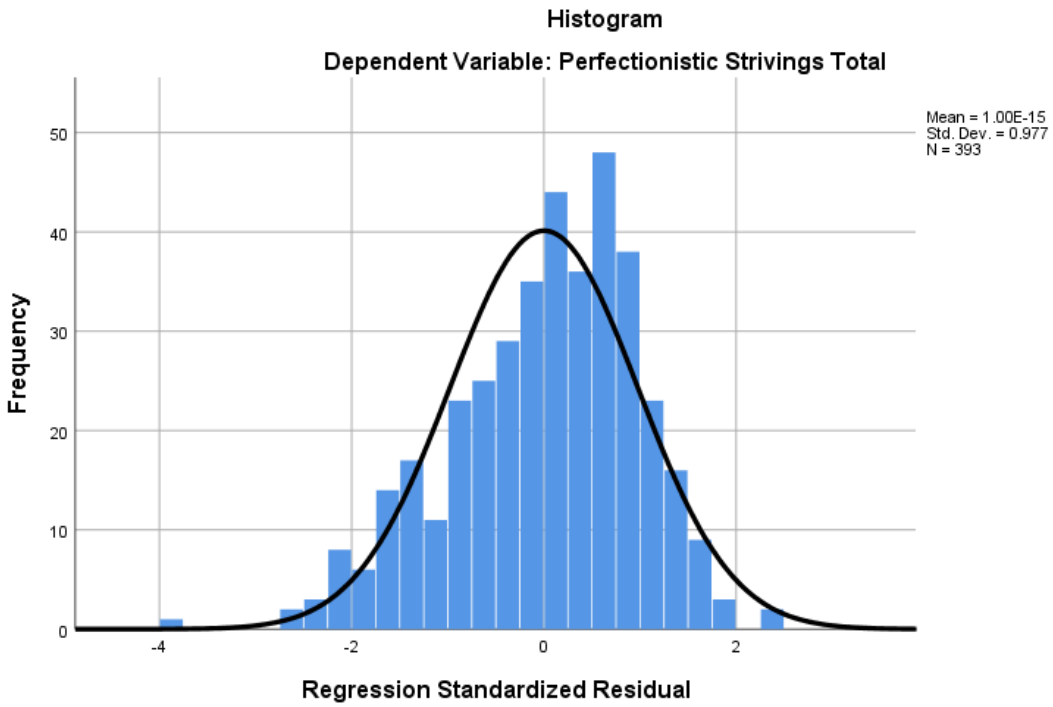

Figure 2. *Histogram of Residuals Showing Uniform Distribution for the Predictor Variables of Sport Specialization, Age, Years Played, Gender and Individual Sport Played with Perfectionistic Strivings.*

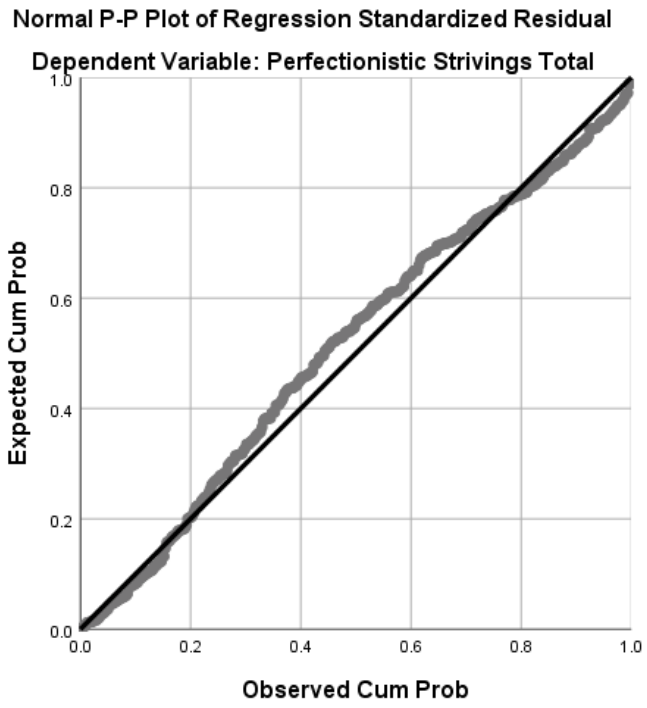

Figure 3. *P-P Plot Showing Uniform Distribution of the Residuals for the Predictor Variables of Sport Specialization, Age, Years Played, Gender and Individual Sport Played with Perfectionistic Strivings.*

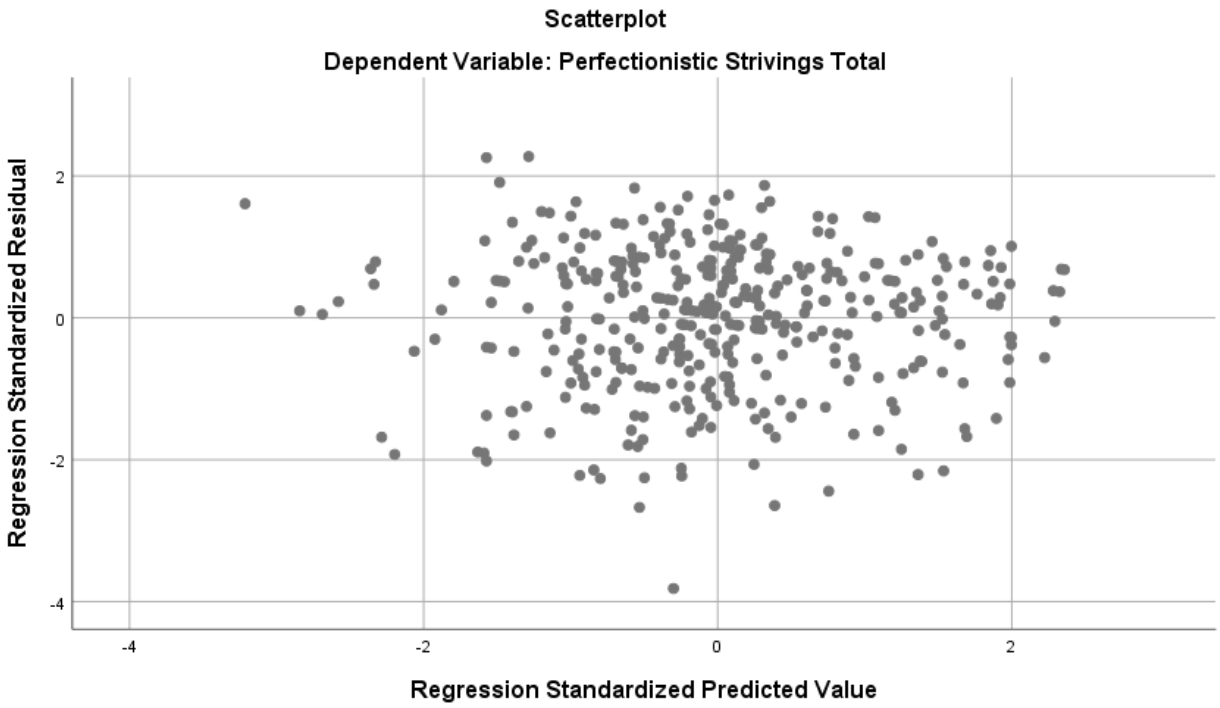

Figure 4. *Scatterplot of Standardize Variance of Residuals for the Predictor Variables, Sport Specialization, Age, Years Played, Gender, Individual Sport Played with Perfectionistic Strivings.*

Summary of the Hypothesis with Research Question I

H_1: Athletes with lower levels of sport specialization will be positively associated with perfectionistic strivings than athletes with higher levels of sport specialization.

H_{01}: There is no relationship between sport specialization and perfectionistic strivings.

The results of the analysis showed there was no relationship between high sport specialization (B = .374, β = .051, p > .05), moderate sport specialization (B = -.075, β = -.015, p > .05) and low sport specialization (B = .151, β = .003, p > .05) and

perfectionistic strivings. As a result, the investigator accepted the null hypothesis. Acceptance of the null hypothesis indicated that sport specialization is not a predictor of perfectionistic strivings.

Descriptive Statistics for Research Question II

The distributional properties of all the variables indicate that while most of the variables are less than 10 standard deviations above the mean, perfectionistic concerns had a relatively high standard deviation of 17.70. Hinkle, Wiersma, and Jurs (2003) noted that a large standard deviation suggests a large amount of variability of measurements around the mean indicating that there was a high level of variability in respondents' answers to total perfectionistic concerns. All the other variables show little variability of distribution around the mean.

Table 3.

Descriptive Statistics of Perfectionistic Concerns, Sport Specialization, Gender, Years Played, and Individual Sport.

Variable	Mean	Std. Deviation	N
Perfectionistic Concerns	72.35	17.70	393
Low Sport Specialization	0.05	0.21	18
Moderate Sport Specialization	0.42	0.82	83

Table 3 (cont.).

Variable	Mean	Std. Deviation	N
Age	20.20	1.36	393
Female	0.63	0.48	249
Male	0.73	0.97	144
Baseball	0.07	0.26	28
Basketball	0.17	0.56	33
Cross Country	0.15	0.64	19
Field Hockey	0.01	0.20	1
Football	0.37	1.31	29
Golf	0.41	1.52	26
Gymnastics	0.46	1.74	26
Lacrosse	0.49	1.91	25
Soccer	0.89	2.67	38
Softball	0.53	2.25	21
Swimming	2.03	4.27	73
Tennis	0.18	1.47	6
Track & Field	0.99	3.60	32
Wrestling	0.31	2.12	8
Volleyball	1.13	4.11	28

Findings on Research Question II

The predictive relationship between each predictor variable and perfectionistic concerns, which addresses each research question II, is summarized in Table 5. Table 5 addresses research question II and its corresponding hypothesis using primarily the F test of R_2 which accessed the unique predictive utilities between each predictor variable and perfectionistic strivings while controlling for sport specialization. The ΔR_2, which

assessed whether a predictor variable resulted in a statistically significant increment in predictive utility or whether it reduced the prediction errors, was also used. Research question II assessed the unique contribution of each of the five predictor variables in predicting perfectionistic concerns as measured by the type of sport specialization. The corresponding null hypothesis is that each of the five predictor variables has a regression coefficient that equals zero and, as a result, there is no statistically significant relationship between each of the predictor variables and sport specialization and perfectionistic concerns.

Analysis shows that in Step I, the entry of Low Sport Specialization, Moderate Sport Specialization, and High Sport Specialization was a significant predictor of perfectionistic concerns, $R_2 = .02$, $F (3, 390) = 3.927$, $p < .05$. After Step II, the addition of age was not a not a significant predictor of perfectionistic concerns $R_2 = .023$, $\Delta R_2 = .003$, $F (1, 390) = 1.182$, $p > 05$. After Step III, the addition of how many years playing their primary sport was also not a significant predictor of perfectionistic concerns, $R_2 =. 024$, $\Delta R_2 = .002$, $F (1, 389) = .738$, $p > .05$. In Step IV, the addition of gender was not a significant predictor to the overall model, $R_2 = .032$, $\Delta R2 = .008$, $F (1, 388) = 3.059$, $p > .05$. The addition of individual sport in Step V was a significant predictor in the model with $R_2 = .093$, $\Delta R_2 = .061$, $F (14, 374) = 1.786$, $p < .05$. The overall model was able to explain 9% of variance in predicting perfectionistic concerns.

As it pertains to research question II, it was found that sport specialization was a significant predictor of perfectionistic concerns. According to the analysis, participants who were low sport specialization or otherwise known as diversified, had no significant relationship with perfectionistic concerns, however those who were highly specialized

did have a significant relationship with perfectionistic concerns and were more likely to have higher levels of perfectionistic concerns ($B = 1.644$, $\beta = .122$, $p < .05$).

Once again, the normality assumption was checked by using a histogram and corresponding p-p plot for standardize residuals. Figure 5 is the histogram of the residuals and Figure 6 is the corresponding p-p plot for each of the predictor variables while controlling for sport specialization for perfectionistic strivings. The histogram is reasonably identical with the normal distribution curve suggesting the residuals follow a normal distribution and that there is not a violation of the normality assumption. The normality assumption is not breached further by the illustration of Figure 6 by the p-p plot which shows that for the plot, the residuals approximate a superimposed straight line.

Figure 7 represents the scatterplot of the standardize residuals for the predictor variables. The scatterplot residuals are randomly and evenly scattered about the line originating from the mean of the residuals and appears to form a rectangle. Figure 6 depicts what appears to be a rectangle, therefore linearity and homoscedasticity of the regression are indicated. Homoscedasticity in the regression means that the variance is the same in the sample and that standard errors are not biased in the test.

Table 4.

Summary of Hierarchical Regression Analysis on a set of Variables Predicting Perfectionistic Concerns While Controlling for Sport Specialization.

Model	Variable	Unstandardized Coefficient		Standardized Coefficient	t	P	F	R_2	ΔR_2
		B	SE	β					
1						0.012	4.484	0.02	0.022
	Moderate Specialization	1.552	2.233	0.072	0.695	0.487			
	High Specialization	2.804	1.386	0.208	2.023	0.044			
2						0.021	0.926	0.025	0.002
	High Specialization	1.478	2.235	0.068	0.661	0.509			
	Moderate Specialization	2.771	1.387	0.206	1.998	0.046			
	Age	-0.628	0.653	-0.048	-0.962	0.337			
3						0.037	0.455	0.026	0.001
	High Specialization	1.473	2.236	0.068	0.659	0.511			
	Moderate Specialization	2.787	1.388	0.207	2.008	0.045			
	Age	-0.520	0.673	-0.040	-0.773	0.440			
	Years Played	-0.159	0.236	-0.035	-0.675	0.500			
4						0.031	2.087	0.031	0.005
	High Specialization	1.316	2.236	0.061	0.589	0.557			
	Moderate Specialization	2.694	1.387	0.200	1.942	0.053			
	Age	-0.440	0.674	-0.034	-0.652	0.515			
	Years Played	-0.165	0.236	-0.036	-0.701	0.484			
	Male	-1.334	0.923	-0.073	-1.445	0.149			
5						0.007	1.847	0.09	0.058
	High Specialization	2.132	2.286	0.098	0.933	0.352			
	Moderate Specialization	2.995	1.426	0.223	2.100	0.036			
	Age	0.027	0.704	0.002	0.038	0.970			
	Years Played	-0.638	0.318	-0.140	-2.004	0.046			

Table 4 (cont.).

Model	Variable	Unstandardized Coefficient	Standardized Coefficient	t	P	F	R_2	ΔR_2
	Male	-3.951	1.206	-0.215	-3.276	0.001		
	Basketball	4.033	2.283	0.126	1.767	0.078		
	Cross-Country	-0.770	1.673	-0.028	-0.460	0.646		
	Football	3.386	0.969	0.250	3.495	0.001		
	Golf	1.690	0.795	0.142	2.127	0.034		
	Gymnastics	0.721	0.748	0.071	0.965	0.335		
	Lacrosse	0.098	0.606	0.011	0.162	0.872		
	Soccer	0.844	0.539	0.127	1.565	0.118		
	Softball	0.054	0.523	0.007	0.104	0.917		
	Swimming	0.559	0.351	0.135	1.592	0.112		
	Tennis	0.497	0.663	0.041	0.749	0.454		
	Wrestling	0.525	0.486	0.063	1.080	0.281		
	Volleyball	-0.075	0.284	-0.018	-0.266	0.791		

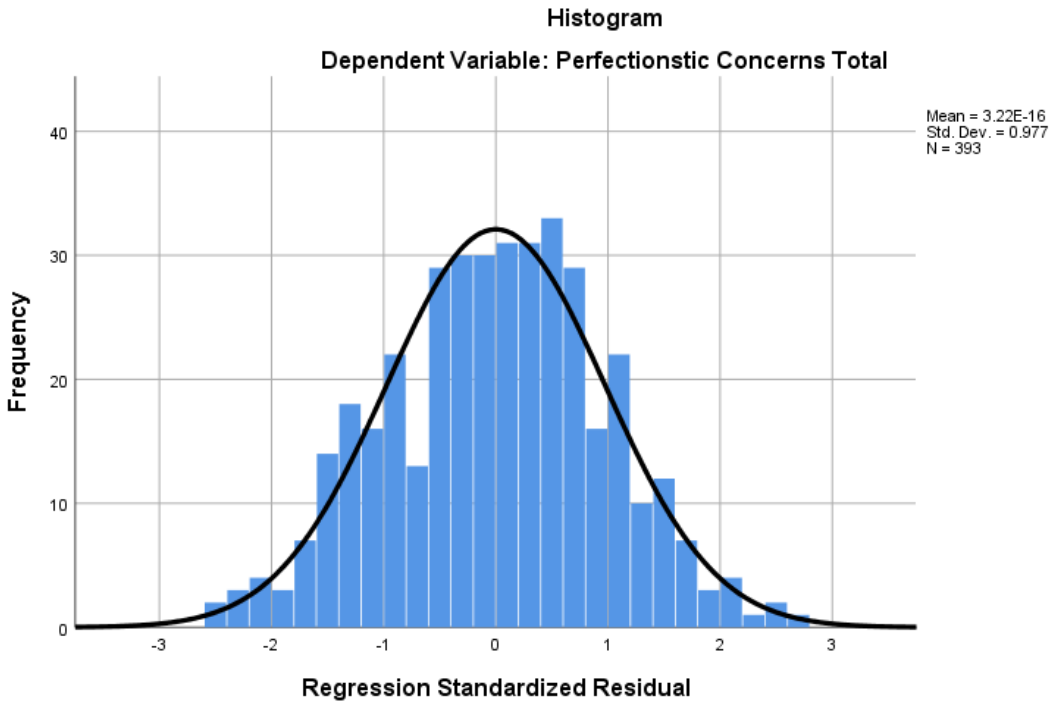

Figure 5. *Histogram of Residuals Showing Uniform Distribution for the Predictor Variables of Sport Specialization, Age, Years Played, Gender and Individual Sport Played with Perfectionistic Concerns.*

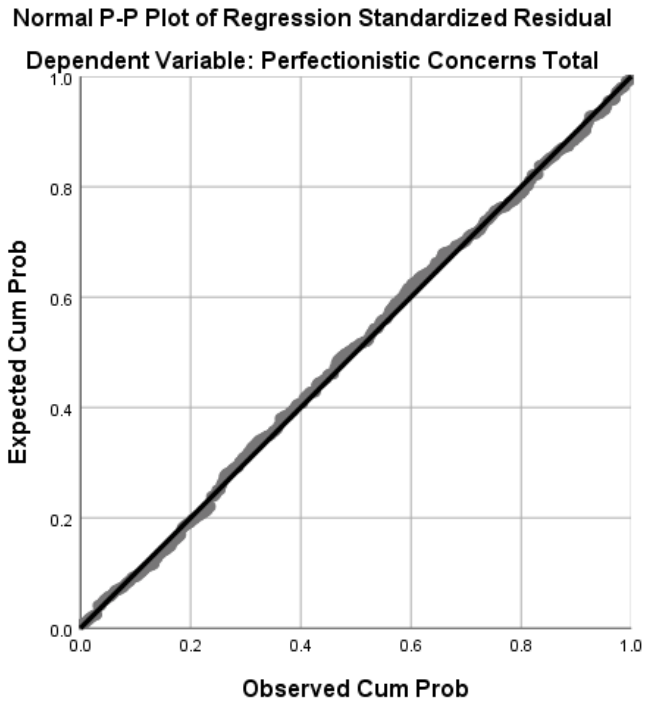

Figure 6. *P-P Plot Showing Uniform Distribution of the Residuals for the Predictor Variables of Sport Specialization, Age, Years Played, Gender and Individual Sport Played with Perfectionistic Concerns.*

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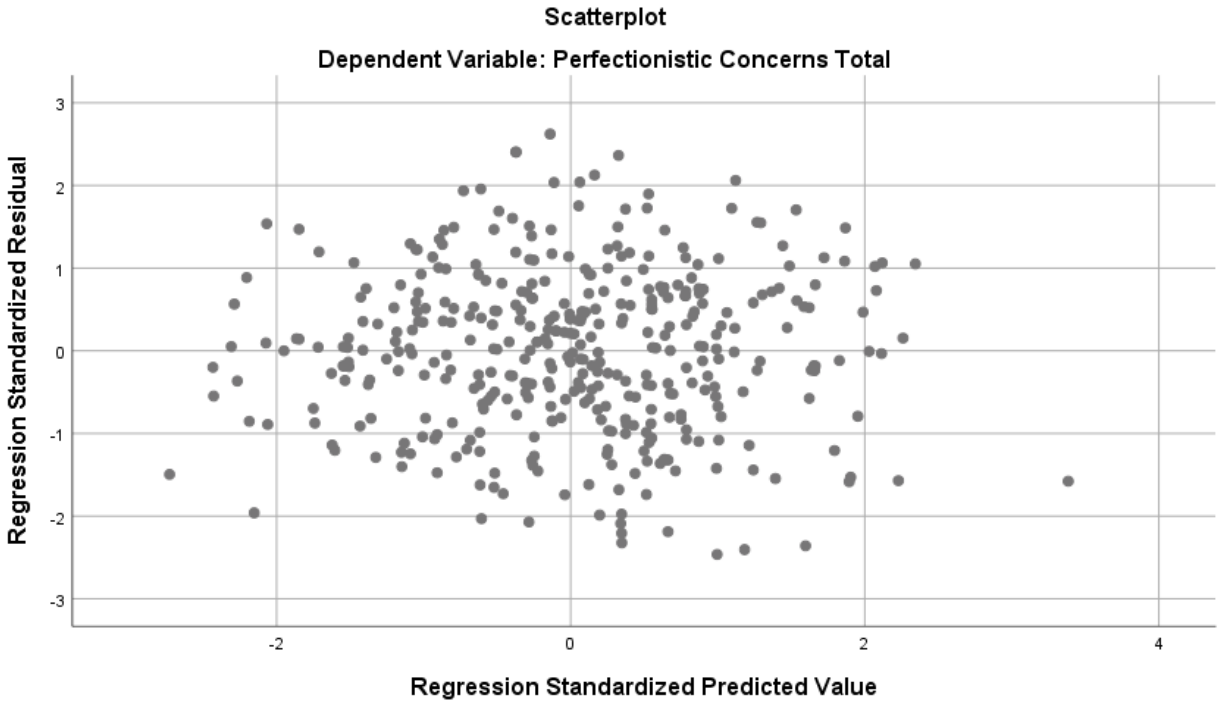

Figure 7. *Scatterplot of Standardize Variance of Residuals for the Predictor Variables of Sport Specialization, Age, Years Played, Gender, Individual Sport Played with Perfectionistic Concerns*.

Summary of the Hypothesis with Research Question II

H_2: Athletes with higher levels of sport specialization will be positively associated with perfectionistic concerns than athletes with lower levels of sport specialization.

H_{02}: There is no relationship between sport specialization and perfectionistic concern.

Results of the analysis indicated that high sport specialization is a statistically

significant predictor of perfectionistic concerns (B = 2.804, β =.208, p < .05). However, the results of the analysis indicated that moderate sport specialization (B = 1.552, β = .072, p >. 05), low sport specialization (B = -3.105, β = -.037, p > .05) is not a statistically significant predictor of perfectionistic concerns. Since high sport specialization was a statistically significant predictor of perfectionistic concerns, the researcher rejected the null hypothesis and accepted the hypothesis.

The results indicated that the more one specializes in sport, the more likely they are to develop perfectionistic concerns. Low sport specialization and moderate sport specialization were not significantly related to perfectionistic concerns while high sport specialization was positively associated with perfectionistic concerns.

Descriptive Statistics for Research Question III

Table 5 addresses the descriptive statistics for perfectionistic strivings and the time in which a person specializes in sport. The distributional properties of all the variables indicate that while most of the variables are less than 10 standard deviations above the mean indicating that there is little variability of distribution around the mean.

Table 5.

Descriptive Statistics of Perfectionistic Strivings and the Time of Sport Specialization.

	Mean	Std. Deviation	N

Perfectionistic Strivings	63.59	9.60	393
Elementary	64.42	9.70	38

Table 5 (cont.).

	Mean	Std. Deviation	N
Middle	63.95	9.97	43
High	62.29	9.40	92
College	63.59	9.60	220

Findings on Research Question III

For research question III, the research sought to investigate the hypothesis that there is a significant difference between the time in which an athlete specializes in a sport during elementary/primary school, middle school, high school, or college with perfectionistic strivings.

A one-way between-subjects ANOVA was conducted to compare the effect of when an athlete specializes in sport on perfectionistic strivings in elementary/primary school, middle school, high school, or college as conditions. There was not a significant effect on perfectionistic strivings for the four specialization time frames [$F (3, 389) = .766$], $p > .05$. As it pertains to research question III, it was found that the time in which the participants specialized in sport was not a significant predictor of perfectionistic concerns. According to the analysis, participants no matter the time they specialized in their primary sport, albeit elementary/primary school, middle school, high school, or college, there was not a relationship with perfectionistic strivings.

Table 6.

One-Way ANOVA Results in Examining the Influence of Time of Sport Specialization on Perfectionistic Strivings.

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	212.26	3.00	70.75	.766	.514
Within Groups	35934.22	389.00	92.38		
Total	36146.48	392.00			

Summary of the Hypothesis with Question III

H_3: There is a significant difference between the time in which an athlete specializes in a sport during elementary/primary school, middle school, high school, or college with perfectionistic strivings.

H_{03}: There is not a significant difference between the time in which an athlete specializes in a sport during elementary/primary school, middle school, high school, or college with perfectionistic strivings.

Results of the analysis indicated that there was not a difference between the times in which an athlete specializes in sport with perfectionistic strivings. As a result, the researcher accepted the null hypothesis. Results of the analysis indicate that regardless of when an athlete specializes in sport, there is not a significant relationship with perfectionistic strivings.

Descriptive Statistics for Research Question IV

Table 7 addresses the descriptive statistics for perfectionistic strivings and the time in which a person specializes in sport. The distributional properties of all the variables indicate that while most of the variables are less than 10 standard deviations above the mean indicating that there is little variability of distribution around the mean. As before, perfectionistic concerns had a standard deviation higher than 10 indicating an increase in variability.

Table 7.

Descriptive Statistics of Perfectionistic Strivings and the Time of Sport Specialization.

	Mean	Std. Deviation	N
Perfectionistic Concerns	74.63	17.70	393
Elementary	73.37	17.71	38
Middle	69.90	19.14	43
High	72.80	18.81	93
College	72.36	16.93	220

Findings for Research Question IV

For research question IV, the research sought to investigate the hypothesis that there is a significant difference between the time in which an athlete specializes in a sport

during elementary/primary school, middle school, high school, or college with perfectionistic concerns.

A one-way between-subjects ANOVA was conducted to compare the effect of when an athlete specializes in sport on perfectionistic concerns in elementary/primary school, middle school, high school, or college as conditions. There was not a significant effect on perfectionistic strivings for the four specialization time frames [$F(3, 389) = .893$], $p > .05$. As it pertains to research question IV, it was found that the time in which the participants specialized in sport was not a significant predictor of perfectionistic concerns. According to the analysis, participants no matter the time in which they specialized in their primary sport, albeit elementary/primary school, middle school, high school, or college, there was not a relationship with perfectionistic concerns.

Table 8.

One-Way ANOVA Results in Examining the Influence of Time of Sport Specialization on Perfectionistic Concerns.

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	840.25	3.00	391.05	.893	0.45
Within Groups	121956.99	389.00	313.33		
Total	122797.24	392.00			

Summary of the Hypotheses of Research Question IV

H_4: There is a significant difference between the time in which an athlete specializes in a sport during elementary/primary school, middle school, high school, or college with perfectionistic strivings.

H_{04}: There is not a significant difference between the time in which an athlete specializes in a sport during elementary/primary school, middle school, high school, or college with perfectionistic strivings.

Results of the analysis indicated that there was not a difference between the times in which an athlete specializes in sport with perfectionistic strivings. As a result, the researcher accepted the null hypothesis. Results of the analysis indicate that regardless of when an athlete specializes in sport, there is not a significant relationship with perfectionistic concerns.

CHAPTER V: DISCUSSION

Overview

This study was one of the first in the field conducted to investigate and statistically validate the role that sport specialization would have on the higher orders of perfectionism. Previous studies on sport specialization generally have been focused on the physical repercussions of sport specialization with very few studies investigating the psychological repercussions of sport specialization. Studies that have been conducted on the psychological ramifications of sport specialization thus far have been anecdotal in nature and thus, not very reliable. Given the rise in popularity in sport specialization, it is imperative for sport practitioners and researchers to have a comprehensive overview of the ramifications of sport specialization.

The results of the analyses that were conducted to investigate sport specializations predictive ability on perfectionism were mixed. Regarding the higher order of perfectionistic strivings, the results indicated that all three levels of sport specialization were not a significant predictor of perfectionistic strivings. While the primary of goal of the analysis was to investigate the role that sport specialization would have on perfectionistic strivings, secondary findings found that the predictor variables of age and gender may have an influence upon perfectionistic strivings. It was found the older one gets in age, the lower levels of perfectionistic strivings one will have. The other secondary finding of the analysis showed that gender can be a predictor of perfectionistic

strivings. It was found that males were more than likely to use the adaptive form of perfectionism as compared to their female counterparts.

The second multiple hierarchal analysis that was conducted investigated the predictive relationship between sport specialization and perfectionistic concerns with the addition of extra predictor variables. It was found that sport specialization, specifically high sport specialization, was positively associated with perfectionistic concerns. Low sport specialization and moderate sport specialization, however, did not have a statistically significant relationship with perfectionistic concerns. The results continue to validate the notion that sport specialization, especially high sport specialization often carries with it negative and unintended consequences. However, it was found that high sport specialization only accounted for 2% of the variance in the analysis.

There were some secondary findings of the perfectionistic concerns when predictor variables were included in the model. In the last model, when sport specialization, age, years played, gender, and individual sport were added, it was found that the number of years played and the gender of males was negatively associated with perfectionistic concerns. This indicated the longer that someone plays a sport, the less likely they were to have perfectionistic concerns. Additionally, males were less likely to have perfectionistic concerns as compared to females. It was found however that if a person played the following sports of football, baseball, and golf, that they were more likely to have higher perfectionistic concerns.

A One-way ANOVA analysis was conducted to compare the effect of when a person specializes in sport on perfectionistic strivings. It was found that regardless of the time when a person specializes in a sport, albeit elementary school, middle school, high

school or in college, that there are no predictive qualities with perfectionistic strivings.

A One-way ANOVA analysis was conducted to compare the effect of when a person specializes in sport on perfectionistic concerns. It was found that regardless of the time when a person specializes in sport, albeit, elementary school, middle school, high school or in college, it was not associated with perfectionistic concerns.

These findings have implications for future research on sport specialization and perfectionism.

Discussion

Research Question I

What effect does specializing in one sport have on an athlete regarding perfectionistic strivings?

The primary purpose of the second analysis of the dissertation was to examine the relationship between sport specialization and perfectionistic strivings. The first hypothesis postulated that athletes with lower levels of sport specialization will be positively associated with perfectionistic strivings than athletes with higher levels sport specialization.

The results found that sport specialization was not related to perfectionistic strivings. Previous research has shown perfectionistic strivings to have both adaptive and maladaptive outcomes. Bieling, Israeli, and Antony (2004) found that perfectionistic

strivings with the addition of having adaptive qualities were also related to maladaptive qualities such as stress, depression, and anxiety. The results of this analysis continue to validate previous research that perfectionistic strivings are associated with very few maladaptive outcomes and a few adaptive outcomes (Hill & Curran, 2016).

Research Question II

What affect does specializing in one sport have on an athlete regarding perfectionistic concerns?

The primary purpose of the second analysis of the dissertation was to examine the relationship between sport specialization and perfectionistic concerns. The second purpose of this analysis was to extend the literature in sport by examining potential moderators, namely age, gender, the number of years playing a primary sport, and the individual sport. For the second hypothesis of this study, it was hypothesis that athletes with higher levels of sport specialization will be positively associated with perfectionistic concerns than athletes with lower levels of sport specialization.

As expected, the findings discussed in the results section of this dissertation, the investigator was able to answer research question II, that sport specializing does have a predictive relationship with perfectionistic concerns, but for only those who are highly specialized in sport. Results of the analysis showed that those who are low and moderate sport specializers did not have a significant relationship with perfectionistic concerns. However, if a person was classified as being highly specialized in sport, it was found that

they are more likely to have perfectionistic concerns. Specifically, the more someone specializes in sport, the more likely they are to have perfectionistic concerns. However, the degree to which this association should be considered as noted by Step I of the model, the R_2 and ΔR_2 are both equal to .02, or more simply put, only 2% of the variance that can be accounted for in the model. While ΔR_2 is usually low when investing human behaviors such as in the fields of sport psychology, the 2% variance is particularly low. Nonetheless, there is a still a significant interaction between sport specialization.

The findings seem to suggest that in congruence with previous research, that sport specialization might carry with it unintended and potentially negative consequences for those who engage in it. While previous research has been on the negative physical consequences of sport specialization, this is one of the first studies to empirically indicate that there are potential negative psychological consequences that are associated with the sport specialization, even amongst what most would deem to be elite athletes. Given that perfectionistic concerns in sport is associated with negative consequences such as an increase in anxiety and athletic burnout, this study further highlights that sports specialization is a maladaptive behavior. Parents, coaches, and athletes should be aware of the potential consequences that are associated with sport specialization.

Research Question III

What effect does the time when someone specializes in sport, early specialization, middle specialization, and late specialization, have regarding perfectionistic strivings?

The primary purpose of the third analysis of the dissertation was to examine the relationship between the time in which someone specialized in sport and perfectionistic strivings. For the third hypothesis of this dissertation, it was hypothesized that there is a significant difference between the time in which an athlete specializes in a sport during elementary/primary school, middle school, high school or in college with perfectionistic strivings.

The findings discussed in the results section of this dissertation, the investigator was able to answer the third research question, unexpectedly it was determined that the time in which someone specializes in sport is not associated with perfectionistic strivings. Regardless of when a person specializes in a sport, it is not associated with perfectionistic strivings.

Research Question IV

What effect does the time when someone specializes in elementary/primary school, middle school, high school, and college have regarding perfectionistic concerns?

The primary purpose of the fourth analysis of the dissertation was to examine the relationship between the time in which someone specialized in sport and perfectionistic strivings. For the fourth hypothesis of this dissertation, it was hypothesized that there is a significant difference between the time in which an athlete specializes in a sport during elementary/primary school, middle school, high school or in college with perfectionistic

concerns.

From the findings discussed in the results section of this dissertation, the investigator was able to answer the fourth research question, as a result, it was determined that the time in which someone specializes in sport is not associated perfectionistic concerns. Regardless when a person specializes in a sport, it is not associated with perfectionistic concerns.

As previously discussed, the pros and cons of sport specialization continues to be investigated. While most of the research has focused on the physical repercussions of sport specialization, very few studies focus on the psychological aspects of perfectionism. The results of this analysis affirm another research that early sport specialization does not appear to have a role in the development of psychological outcomes. In a study conducted by Buhrow, Digman, Waldron, Gienau, Thomas & Sigler (2017), it was found that there was not a difference between those who specialized in sport early or experienced diversification in relationship with mental toughness using college athletes. In a similar fashion, the current study indicated that there was not a difference between the time in which a person specializes in sport, whether early or late in their playing careers and perfectionism.

The results of this dissertation suggest that sport specialization does not have many longitudinal repercussions, at least psychologically. It seems that any psychological repercussions are confined to the time, and more importantly the degree in which one is engaging in sport specialization.

Limitations of the Current Study

While this study advances the understanding between sport specialization and perfectionism, in addition to the predictor variables, this study is not without limitations. The first limitation of this study was the population sample that was used for this study. This study employed a very specific sample out of the population by using Football Bowl Subdivision athletes. Using such a niche population increased the homogeneity of the sample, which in turned increased the limitations that occurred. First, this homogeneity decreased the variability of responses in the analysis. With sport specialization, there is currently one classification system currently being used in research. This classifies athletes as being low, moderate or high sport specializers. Given that this study used current Football Bowl Subdivision athletes who were competing, or did compete in the latest academic year, it is sensible to expect that the majority of athletes would be classified as either high or moderate sport specializers. Thus, it is reasonable to assume that this would limit the number of low sport specializers for this study. The results of the analysis showed this to be true as only a few of the participants were classified as low sport specializers (N = 19). Secondly, since the participants in the study were Football Bowl Subdivision athletes, these athletes could be considered to be “elite athletes”. As noted earlier, only 2.2% of girls and 2.0% of boys who participated in high school sports were believed to receive partial or full scholarships. The estimates are even lower for full scholarships at 1.2% for girls and 1.1% for boys. Since these are elite athletes who are considered outliers from the general populous due to their higher level of success and ability, they may be more averse to the ramifications of both sport specialization and

perfectionism. This could potentially make it harder to generalize the results to a broader range of the population. Results might be more significant using a different population than Football Bowl Subdivision athletes, therefore further research is warranted.

The researcher took various steps to reduce the homogeneity of the sample. One step the researcher took was to vary the sample of the Football Bowl Subdivision athletes. First, athletes from different parts of the country were recruited to limit the influence being from a particular region of the country might have on the results. Thus, athletes were recruited from the states of; Alabama, Arkansas, California, Connecticut, Massachusetts, Michigan, Ohio, Oklahoma, Florida, South Carolina, Tennessee and Virginia. Additionally, athletes were recruited from different levels of competition and conferences. Athletes in this study belonged to institutions in the following conferences: Pacific 12 Conference, Southeastern Conference, The Sun Belt Conference, Conference USA, The Atlantic 10 Conference, The Atlantic Coast Conference, The Big 12 Conference, and The Big Ten Conference.

Low numbers of the participants in some of the categories of individual sport is another limitation in this study. To increase the variability of a homogeneous sample, athletes from 15 different sports were recruited for this study. Some sports yielded a low number of participants. The researcher set a goal of obtaining at least 25 athletes from each sport. The following sports did not reach this goal; cross country (N = 19), field hockey (N = 1), softball (N = 21), tennis (N = 6), and wrestling (N = 8). Caution should be taken when trying to infer results from these sports.

Perhaps the main weakness of this study is the cross-sectional and the retrospective method in which it has been conducted. All obtained data followed from a

self-report survey conducted at a single point in time with the addition of some recall components, leading to a limitation in generalization. A longitudinal study would possibly produce different results. In addition, purposive-homogeneous sampling was used for this study. This type of non-probability sampling involves the sample being drawn from a distinct subpopulation. There are many advantages of purposive sampling; eliminating those who are not suitable for the sampling are easily eliminated so only the most suited candidates remain, it is also convenient since the appropriate people are already identified, and perhaps most importantly the results are expected to be more representative of the population as compared to other sampling methods. However, despite these advantages purposive-homogeneous sampling is not without criticisms and limitations. Purposive-homogeneous sampling is often vulnerable to selection bias of the researcher. This means the selection criteria can be subjective and arbitrary based on the bias of the researcher. As previously discussed, generalization of the results can be hard to ascertain. The researcher would like to point out that the aim of this study is not to be generalized to the population, but instead focuses primarily on athletes.

Recommendations for Future Research

There are many recommendations from the results of the analyses that this researcher would suggest for practitioners of sport and sport researchers alike. Due to the limitations that were discussed previously, there are areas that future studies can address that will strengthen the understanding of sport specialization. This researcher highly recommends that future studies on sport specialization focus on those who are

participating in youth sport as compared to this study which investigated elite adult athletes. Sport specialization development models in sport specialization often focus on youth sports and thus future research should do so as well. The current study used adult, collegiate athletes whom many would deem as being “elite”. As such, the results of the present analyses might be hampered due to the population used. Elite athletes are more likely to be resistant to the effects of sport specialization as compared to athletes that many would not consider “elite”. Future studies with youth athletes might be able to yield more significant variability. Additionally, the results of this study found that age was a negative predictor of perfectionistic concerns. The older an athlete got, the lower they would score on perfectionistic concerns. The current study, while still being a statistically significant predictor of perfectionistic concerns, was only able to account for two percent of variance while using “elite” athletic adults. Using a younger population might yield results in which there is an increase in variability, and thus having more significant results.

The analysis of this study found that the individual sport participants engaged in might increase the likelihood of perfectionistic concerns. This analysis showed that two team sports, baseball and football, were significant predictors of perfectionistic concerns. It might be worthwhile for future researchers to investigate the role that playing on a team sport as compared to individual sport could have on perfectionism.

Results of the analyses also indicated the time in which a person, or how long a person has specialized in a sport, is not associated with neither form of perfectionism, perfectionistic strivings or perfectionistic concerns. Results of the analysis showed that regardless when an athlete decided to specialize in sport, whether it was in elementary

school, middle school, high school, or college, it did not influence perfectionism, both perfectionistic strivings and perfectionistic concerns. This finding suggests that the degree in which a person is engaging in sport specialization is confined to that moment in time, and more importantly the degree to which one is specialized. However, more research is needed. Future studies need to employ more longitudinal studies to conclusively determine if the psychological ramifications that are a resultant from sport specialization are temporary or if they hold longer consequences.

Secondary findings also need to be investigated further. The results from the current analysis found that there were differences between genders and perfectionism. The results of the analysis seem to indicate the males and females tend to vary on perfectionism. Males were found to have lower levels of perfectionistic concerns and have higher levels of perfectionistic strivings. Additionally, the results indicated sport might also have an influence on perfectionistic concerns. Three team sports, golf, baseball, and football were found to be associated with perfectionistic concerns. The finding goes against previous research on perfectionism and team dynamics. It was suggested that individuals on teams would place high standards for their teammates, and helping raise performance standards (Hill, Stoeber, Brown, & Appleton, 2014). This study suggests being on a team might increase perfectionistic concerns. One of the key components of perfectionistic concerns are concerns that are socially prescribed. The pressures put on athletes by coaches and peers might be the underlying cause as to why the maladaptive form of perfectionism is more prominent in these sports. The findings in this study are preliminary and further research is warranted.

Practical Recommendations

Sport specialization has become an increasingly popular phenomenon in sport that young athletes are engaging at an increasing rate. However, those choosing to do so are going against the consensus that sport specialization is a nonadaptive behavior which can be potentially damaging to the participant. The results of the current analyses though show that sport specialization may not be as aversive as previously thought, at least psychologically. With regards to specialization in sport and the development of perfectionism, it was found that specialization does not have any long-term repercussions no matter what age the person specializes in sport. However, there is a potential for sport specialization to lead to an increase in perfectionistic concerns. Sport management professionals, coaches, parents and athletes should be fully aware of the consequences of sport specializations, both physically and psychologically, before having athletes become specialized. This study shows the more one becomes specialized in a sport, the potential to increase perfectionistic concerns rises. Athletes should fully be aware the pitfalls of specializing in sport.

Conclusions

Findings from this study confirm that sport specialization is a predictor of perfectionistic concerns. Additionally, three sports, golf, baseball and football were found to be significant predictors of perfectionistic concerns. Furthermore, age was also found to be a significant predictor of perfectionistic concerns. However, sport specialization

was found not to be a predictor of perfectionistic strivings. Additionally, the time in which a person specialized in sport was not found to be a significant predictor of perfectionistic strivings and concerns. Overall, this study provides a basis for further research as well as provides suggestions for future research by offering additional opportunities to further investigate the effects of sport specialization on perfectionism.

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APPENDICES

APPENDIX A: Sport Specialization Classification Questionnaire

Please answer the following questions with a yes and no. It is important that you answer each question truthfully to the best of your abilities.

Did you ever quit other sports to focus on one sport?

Yes____ No____

Did you train more than 8 months out of the year in one sport?

Yes____ No____

Did you consider your primary sport more important than others?

Yes____ No____

APPENDIX B: Competitive Orientations Scale (Sport-MPS-2)

INSTRUCTIONS The purpose of this questionnaire is to identify how players view certain aspects of their competitive experiences in sport. Please help us to more fully understand how players view a variety of their competitive experiences by indicating the extent to which you **agree or disagree** with the following statements. (Circle one response option to the right of each statement). Some of the questions relate to your sport experiences in general, while others relate specifically to experiences on the team that you have most recently played with. **There are no right or wrong answers** so please don't spend too much time on any one statement; simply choose the answer that best describes how you view each statement.

	To what extent do you agree or disagree with the following statements?	Strongly Disagree	Disagree	Neither Agree Nor Disagree	Agree	Strongly Agree
1.	If I do not set the highest standards for myself in my sport, I am likely to end up a second-rate player.	1	2	3	4	5
2.	Even if I fail slightly in competition, for me, it is as bad as being a complete failure.	1	2	3	4	5
3.	I usually feel uncertain as to whether or not my training effectively prepares me for competition.	1	2	3	4	5
4.	My parents set very high standards for me in my sport.	1	2	3	4	5
5.	On the day of competition I have a routine that I try to follow.	1	2	3	4	5
6.	I feel like my coach criticizes me for doing things less than perfectly in competition.	1	2	3	4	5
7.	In competition, I never feel like I can quite meet my parents' expectations.	1	2	3	4	5
8.	I hate being less than the best at things in my sport.	1	2	3	4	5
9.	I have and follow a pre-competitive routine.	1	2	3	4	5
10.	If I fail in competition, I feel like a failure as a person.	1	2	3	4	5
11.	Only outstanding performance during competition is good enough in my family.	1	2	3	4	5
12.	I usually feel unsure about the adequacy of my pre-competition practices.	1	2	3	4	5

13.	Only outstanding performance in competition is good enough for my coach.	1	2	3	4	5
14.	I rarely feel that my training fully prepares me for competition.	1	2	3	4	5
15.	My parents have always had higher expectations for my future in sport than I have.	1	2	3	4	5
16.	The fewer mistakes I make in competition, the more people will like me.	1	2	3	4	5

Please complete the remaining items in this questionnaire on the next page. ☞

	To what extent do you agree or disagree with the following statements?	Strongly Disagree	Disagree	Neither Agree Nor Disagree	Agree	Strongly Agree
17.	It is important to me that I be thoroughly competent in everything I do in my sport.	1	2	3	4	5
18.	I follow pre-planned steps to prepare myself for competition.	1	2	3	4	5
19.	I feel like I am criticized by my parents for doing things less than perfectly in competition.	1	2	3	4	5
20.	Prior to competition, I rarely feel satisfied with my training.	1	2	3	4	5
21.	I think I expect higher performance and greater results in my daily sport-training than most players.	1	2	3	4	5
22.	I feel like I can never quite live up to my coach's standards.	1	2	3	4	5
23.	I feel that other players generally accept lower standards for themselves in sport than I do.	1	2	3	4	5
24.	I should be upset if I make a mistake in competition.	1	2	3	4	5
25.	In competition, I never feel like I can quite live up to my parents' standards.	1	2	3	4	5
26.	My coach sets very high standards for me in competition.	1	2	3	4	5
27.	I follow a routine to get myself into a good mindset going into competition.	1	2	3	4	5
28.	If a team-mate or opponent (who plays a similar position to me) plays better than me during competition, then I feel like I failed to some degree.	1	2	3	4	5
29.	My parents expect excellence from me in my sport.	1	2	3	4	5
30.	My coach expects excellence from me at all times: both in training and competition.	1	2	3	4	5
31.	I rarely feel that I have trained enough in preparation for a competition.	1	2	3	4	5
32.	If I do not do well all the time in competition, I feel that people will not respect me as an athlete.	1	2	3	4	5
33.	I have extremely high goals for myself in my	1	2	3	4	5

	sport.					
34.	I develop plans that dictate how I want to perform during competition.	1	2	3	4	5
35.	I feel like my coach never tries to fully understand the mistakes I sometimes make.	1	2	3	4	5

Please complete the remaining items in this questionnaire on the next page. ☞

	To what extent do you agree or disagree with the following statements?	Strongly Disagree	Disagree	Neither Agree Nor Disagree	Agree	Strongly Agree
36.	I set higher achievement goals than most athletes who play my sport.	1	2	3	4	5
37.	I usually have trouble deciding when I have practiced enough heading into a competition.	1	2	3	4	5
38.	I feel like my parents never try to fully understand the mistakes I make in competition.	1	2	3	4	5
39.	People will probably think less of me if I make mistakes in competition.	1	2	3	4	5
40.	My parents want me to be better than all other players who play my sport.	1	2	3	4	5
41.	I set plans that highlight the strategies I want to use when I compete.	1	2	3	4	5
42.	If I play well but only make one obvious mistake in the entire game, I still feel disappointed with my performance.	1	2	3	4	5

Sport-MPS-2 Scoring Instructions (42 Items)

Sum the scores for the following items to obtain composite subscale scores:

Personal Standards (7 items): 1, 8, 17, 21, 23, 33, 36 (Possible score range: 7 – 35)

1. If I do not set the highest standards for myself in my sport, I am likely to end up a second-rate player.
8. I hate being less than the best at things in my sport.
17. It is important to me that I be thoroughly competent in everything I do in my sport.
21. I think I expect higher performance and greater results in my daily sport-training than most players.
23. I feel that other players generally accept lower standards for themselves in sport than I do.
33. I have extremely high goals for myself in my sport.
36. I set higher achievement goals than most athletes who play my sport.

Concern Over Mistakes (8 items): 2, 10, 16, 24, 28, 32, 39, 42 (Possible score range: 8 – 40)

2. Even if I fail slightly in competition, for me, it is as bad as being a complete failure.
10. If I fail in competition, I feel like a failure as a person.
16. The fewer mistakes I make in competition, the more people will like me.
24. I should be upset if I make a mistake in competition.
28. If a team-mate or opponent (who plays a similar position to me) plays better than me during competition, then I feel like I failed to some degree.
32. If I do not do well all the time in competition, I feel that people will not respect me as an athlete.
39. People will probably think less of me if I make mistakes in competition.
42. If I play well but only make one obvious mistake in the entire game, I still feel disappointed with my performance.

Perceived Parental Pressure (9 items): 4, 7, 11, 15, 19, 25, 29, 38, 40 (Possible score range: 9 – 45)

4. My parents set very high standards for me in my sport.
7. In competition, I never feel like I can quite meet my parents' expectations.
11. Only outstanding performance during competition is good enough in my family.
15. My parents have always had higher expectations for my future in sport than I have.
19. I feel like I am criticized by my parents for doing things less than perfectly in competition.
25. In competition, I never feel like I can quite live up to my parents' standards.
29. My parents expect excellence from me in my sport.
38. I feel like my parents never try to fully understand the mistakes I make in competition.
40. My parents want me to be better than all other players who play my sport.

Perceived Coach Pressure (6 items): 6, 13, 22, 26, 30, 35 (Possible score range: 6 – 30)

6. I feel like my coach criticizes me for doing things less than perfectly in competition.
13. Only outstanding performance in competition is good enough for my coach.
22. I feel like I can never quite live up to my coach's standards.
26. My coach sets very high standards for me in competition.
30. My coach expects excellence from me at all times: both in training and competition.
35. I feel like my coach never tries to fully understand the mistakes I sometimes make.

Doubts About Actions (6 items): 3, 12, 14, 20, 31, 37 (Possible score range: 6 – 30)

3. I usually feel uncertain as to whether or not my training effectively prepares me for competition.
12. I usually feel unsure about the adequacy of my pre-competition practices.
14. I rarely feel that my training fully prepares me for competition.
20. Prior to competition, I rarely feel satisfied with my training.
31. I rarely feel that I have trained enough in preparation for a competition.
37. I usually have trouble deciding when I have practiced enough heading into a competition.

Organization (6 items): 5, 9, 18, 27, 34, 41 (Possible score range: 6 – 30)

5. On the day of competition I have a routine that I try to follow.
9. I have and follow a pre-competitive routine.
18. I follow pre-planned steps to prepare myself for competition.
27. I follow a routine to get myself into a good mindset going into competition.
34. I develop plans that dictate how I want to perform during competition.
41. I set plans that highlight the strategies I want to use when I compete.

APPENDIX C: Hewitt & Flett Multidimensional Perfectionism Scale

		Disagree						Agree	Self Oriented	Other Oriented	Socially Prescribed
1.	When I am working on something, I cannot relax until it is perfect	1	2	3	4	5	6	7			
2.	I am not likely to criticize someone for giving up too easily	7	6	5	4	3	2	1			
3.	It is not important that people I am close to are successful	7	6	5	4	3	2	1			
4.	I seldom criticize my friends for accepting second best	7	6	5	4	3	2	1			
5.	I find it difficult to meet others' expectations of me	1	2	3	4	5	6	7			
6.	One of my goals is to be perfect in everything I do	1	2	3	4	5	6	7			
7.	Everything that others do must be of top-notch quality	1	2	3	4	5	6	7			
8.	I never aim for perfection on my work	7	6	5	4	3	2	1			
9.	Those around me readily accept that I can make mistakes too	7	6	5	4	3	2	1			
10.	It doesn't matter when someone close to me does not do their absolute best	7	6	5	4	3	2	1			
11.	The better I do, the better I am expected to do	1	2	3	4	5	6	7			
12.	I seldom feel the need to be perfect	7	6	5	4	3	2	1			
13.	Anything that I do that is less than excellent will be seen as poor work by those around me	1	2	3	4	5	6	7			
14.	I strive to be as perfect as I can be	1	2	3	4	5	6	7			
15.	It is very important that I am perfect in everything I attempt	1	2	3	4	5	6	7			
16.	I have high expectations for the people who are important to me	1	2	3	4	5	6	7			
17.	I strive to be the best at everything I do	1	2	3	4	5	6	7			
18.	The people around me expect me to succeed at everything I do	1	2	3	4	5	6	7			
19.	I do not have very high standards for those around me	7	6	5	4	3	2	1			

20.	I demand nothing less than perfection of myself	1	2	3	4	5	6	7			
21.	Others will like me even if I don't excel at everything	7	6	5	4	3	2	1			
22.	I can't be bothered with people who won't strive to better themselves	1	2	3	4	5	6	7			
23.	It makes me uneasy to see an error in my work	1	2	3	4	5	6	7			
24.	I do not expect a lot from my friends	7	6	5	4	3	2	1			
	SUBTOTALS Page 1 Add up in each column the colored areas to create summary score for each dimension								SO =	OO=	SP=
		Disagree						Agree	Self Oriented	Other Oriented	Socially Prescribed
25.	Success means that I must work even harder to please others	1	2	3	4	5	6	7			
26.	If I ask someone to do something, I expect it to be done flawlessly	1	2	3	4	5	6	7			
27.	I cannot stand to see people close to me make mistakes	1	2	3	4	5	6	7			
28.	I am perfectionistic in setting my goals	1	2	3	4	5	6	7			
29.	The people who matter to me should never let me down	1	2	3	4	5	6	7			
30.	Others think I am okay, even when I do not succeed	7	6	5	4	3	2	1			
31.	I feel that people are too demanding of me	1	2	3	4	5	6	7			
32.	I must work to my full potential at all times	1	2	3	4	5	6	7			
33.	Although they may not say it, other people get very upset with me when I slip up	1	2	3	4	5	6	7			
34.	I do not have to be the best at whatever I am doing	7	6	5	4	3	2	1			
35.	My family expects me to be perfect	1	2	3	4	5	6	7			
36.	I do not have very high goals for myself	7	6	5	4	3	2	1			
37.	My parent rarely expected me to excel in all aspects of my life	7	6	5	4	3	2	1			
38.	I respect people who are average	7	6	5	4	3	2	1			
39.	People expect nothing less than perfection from me	1	2	3	4	5	6	7			
40.	I set very high standards for myself	1	2	3	4	5	6	7			
41.	People expect more from me than I am capable of giving	1	2	3	4	5	6	7			
42.	I must always be successful at school or work	1	2	3	4	5	6	7			

43.	It does not matter to me when a close friend does not try their hardest	7	6	5	4	3	2	1			
44.	People around me think I am still competent even if I make a mistake	7	6	5	4	3	2	1			
45.	I seldom expect others to excel at whatever they do.	7	6	5	4	3	2	1			
	SUBTOTALS Page 2 Add up in each column the colored squares for each dimension										
	SUBTOTALS from Page 1										
	SUBSCALE TOTALS								SO =	OO=	SP=

APPENDIX D: IRB Approval

IRB
INSTITUTIONAL REVIEW BOARD
Office of Research Compliance, 010A Sam Ingram Building, 2269 Middle Tennessee Blvd Murfreesboro, TN 37129

IRBN007 – EXEMPTION DETERMINATION NOTICE

Thursday, March 09, 2017

Investigator(s): Jason Hughes; Colby Jubenville; Helen Gray
Investigator(s') Email(s): jnh4m@mtmail.mtsu.edu; Colby.Jubenville@mtsu.edu; hjgray@mtsu.edu
Department: Health and Human Performance

Study Title: COLLEGIATE ATHLETES PERCEPTIONS OF SPORT SPECIALIZATION AND ITS RELATIONSHIP WITH PERFECTIONISM
Protocol ID: **17-1179**
Dear Investigator(s),
The above identified research proposal has been reviewed by the MTSU Institutional Review Board (IRB) through the **EXEMPT** review mechanism under 45 CFR 46.101(b)(2) within the research category *(2) Educational Tests* A summary of the IRB action and other particulars in regard to this protocol application is tabulated as shown below:

IRB Action	EXEMPT from further IRB review***	
Date of expiration	**NOT APPLICABLE**	
Participant Size	384 (Three Hundred Eighty Four	
Participant Pool	**Current NCAA Division 1 Athletes**	
Mandatory Restrictions	Must obtain active informed consent; participants must be age 18+	
Additional Restrictions	**Participants restricted to those currently participating in NCAA Division 1 sports; Age 18 - 25**	
Comments	None at this time	
Amendments	**Date**	**Post-Approval Amendments** None at this time

***This exemption determination only allows above defined protocol from further IRB review such as continuing review. However, the following post-approval requirements still apply:

- Addition/removal of subject population should not be implemented without IRB approval
- Change in investigators must be notified and approved
- Modifications to procedures must be clearly articulated in an addendum request and the proposed changes must not be incorporated without an approval
- Be advised that the proposed change must comply within the requirements for exemption
- Changes to the research location must be approved – appropriate permission letter(s) from external institutions must accompany the addendum request form

- Changes to funding source must be notified via email (irb_submissions@mtsu.edu)
- The exemption does not expire as long as the protocol is in good standing
- Project completion must be reported via email (irb_submissions@mtsu.edu)
- Research-related injuries to the participants and other events must be reported within 48 hours of such events to compliance@mtsu.edu

The current MTSU IRB policies allow the investigators to make the following types of changes to this protocol without the need to report to the Office of Compliance, as long as the proposed changes do not result in the cancellation of the protocols eligibility for exemption:

- Editorial and minor administrative revisions to the consent form or other study documents
- Increasing/decreasing the participant size

The investigator(s) indicated in this notification should read and abide by all applicable post- approval conditions imposed with this approval. Refer to the post-approval guidelines posted in the MTSU I RB's website . Any unanticipated harms to participants or adverse events must be reported to the Office of Compliance at (615) 494-8918 within 48 hours of the incident.

All the research-related records, which include signed consent forms, current & past investigator information, training certificates, survey instruments and other documents related to the study, must be retained by the PI or the faculty advisor (if the PI is a student) at the secure location mentioned in the protocol application. The data storage must be maintained for at least three (3) years after study completion. Subsequently, the researcher may destroy the data in a manner that maintains confidentiality and anonymity. IRB reserves the right to modify, change or cancel the terms of this letter without prior notice. Be advised that IRB also reserves the right to inspect or audit your records if needed.

Sincerely,

Institutional Review Board
Middle Tennessee State University

Quick Links:
Click here for a detailed list of the post-approval responsibilities. More information on exempt procedures can be found here.