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The relationship between perfectionism and aggression in collegiate athletes

An Honors Thesis submitted in partial fulfillment of the requirements for Honors in *Health Sciences and Kinesiology.*

By Mia Colucci

Under the mentorship of *Dr. Megan Byrd*

ABSTRACT

The traits of perfectionism and aggression in modern society are pervasive. Negative effects of both perfectionistic and aggressive behavior are well-documented, including increased risk of mental illness, such as anxiety, depression, and eating disorders (Wade & Tiggeman, 2013; Wheeler et al., 2011; Chung et al., 2019; Koivula et al., 2002). Perfectionism and aggression are traits seen independently in collegiate athletes and are relevant traits when assessing an athletes psychological profile. While the two traits have been linked previously in the general population (Chester, 2015), little research exists to link the two in collegiate athletes. This study's purpose is to discover the relationship, if any, between the traits of perfectionism and aggression in collegiate athletes. By establishing such a relationship, the importance of mitigating the negative effects of perfectionism and aggression would consequently be established, thus potentially improving athlete well-being and performance. To analyze this, self-report measures on aggression (STAXI-2; Spielberger, 1999; BAAGI; Bredemeier, 1975) and perfectionism (Sport-MPS-2; Gotwals & Dunn, 2009) were administered to university, club sport, and intramural athletes at the university level.

Keywords: perfectionism, aggression, athletes

Thesis Mentor:_____

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Introduction

Perfectionism

Perfectionism is a multifaceted construct that is defined by the striving to reach high, often unobtainable, standards or goals (Stairs et al., 2011). There is no one trait that determines if one is a perfectionist. However, typical of those that can be defined as having perfectionistic tendencies include but are not limited to the desire for order, a negative affective response to mistakes, and high expectations of others. The trait can be reflective of the expectations one has of themself, expectations they feel are placed on them, and/or the expectations that they have for others, all of which can be characterized as in excess of the demands of the scenario. Two primary factors have been identified that encompass the trait of perfectionism: perfectionistic strivings (PS) and perfectionistic concerns (PC). The former encompasses the compulsive need to obtain particular standards and the behavior that occurs as a result, whereas the latter pertains more to the beliefs of the individual, including self-criticism, perception of criticism from others, and dissatisfaction with achievement levels (Vicent et al., 2021). Perfectionism can also be considered within the framework of the adaptive-maladaptive dualistic model. Adaptive perfectionism can be defined as striving for high standards while also maintaining personal satisfaction and self-esteem, whereas maladaptive perfectionism is where the individual's striving for high standards transforms into behaviors that cause negative affect, low self-esteem, or distress (Lo & Abbot, 2013). In relation to Vicent's model, those who exhibit maladaptive perfectionism likely exhibit higher levels of PC.

Negative effects of perfectionism, specifically maladaptive perfectionism, are well-documented. It has been heavily associated with mood disorders and anxiety disorders, of which the negative effects are also well documented. Wheeler et al. (2011) established not only

that perfectionism was associated with one's likelihood of being diagnosed with any one of the disorders that were included in the study, but also for the likelihood of experiencing comorbidity of these disorders and experiencing higher degree of symptom severity. Symptoms included anhedonia, fear or nervousness, and low self-worth, among others. A particularly strong relationship was established between perfectionism and social anxiety disorder. This is due to the similarities in cognitive processes that occur in both social anxiety disorder and those with perfectionism. When placed in social situations, those with social anxiety disorder feel that they are performing and therefore impose certain standards upon themselves, much as with perfectionists. When those standards are not met to the satisfaction of the individual, maladaptive coping strategies are often implemented, including avoiding social situations in the case of the individual with social anxiety disorder. Similarly, a person with perfectionistic tendencies may avoid those situations in which they feel they will not obtain their standards, or may procrastinate on important tasks for similar reasons.

Perfectionism also plays an important role in disordered eating. The relationship between perfectionism and body dissatisfaction is a notable one (Wade & Tiggemann, 2013). Body dissatisfaction, defined by the above authors as discrepancies between ideal and current weight, as well as current and ideal body shape, is a driving role in the initial development and maintenance of an eating disorder. Similar to social anxiety disorder, the cognitive processes involved in perfectionism are similar to or may cause the cognitive processes involved in eating disorders. Because eating disorders are "goal-oriented" in terms of physique and/or weight (i.e. having a certain size waist, reaching a certain weight), PS is highly associated with eating disorders, particularly anorexia (Vicent et al., 2021). The physical effects of eating disorders can include hair loss, decreased bone mineral density, amenorrhea, infertility, and organ failure.

Emotional effects can manifest as low self-esteem, down mood, hostility, and feelings of loneliness. Overall, these effects reduce the quality of one's life.

When applied in the context of college athletes, the risks associated with perfectionism become heightened. Upon examining the risks associated with perfectionism above, it is clear that there need to be specific considerations made for this population. One example is mood disorders, such as depression. College athletes have been found to be more susceptible to depressive symptoms (Cox, 2017). In and of themselves, mood disorders can be socially ostracizing. This can compound with social difficulties that result from perfectionistic standards being imposed by the individual onto friends and family. If one has unrealistic standards for themselves and projects that onto a close friend or family member, it may be difficult for the other person to understand the root source of said standards. Conflict may arise as a result of unrealistic ideals. As a result, relationships and social support among these types of athletes may suffer.

Social support is crucial in mitigating depressive symptoms for this demographic, as established by Sullivan et. al (2020). Social support may fall into several categories: emotional support, tangible support, informational support, and appraisal support (Cooke et al., 1988). Emotional support can consist of listening to another's problems and providing empathy. Tangible support is supporting another by means of money, acts of service, or labor. Informational support is providing one with advice or information that would aid in solving a problem. Lastly, appraisal support gives one information that would be useful in terms of self-evaluation. Emotional support and appraisal support are sometimes considered to be combined into one aspect of social support. Emotional and appraisal support especially can

suffer when relationships suffer. Thus, it is imperative to understand the levels to which a college athlete experiences perfectionistic attitudes to ensure they receive appropriate social support.

Byrne & Mclean (2001) identify that personality traits such as perfectionism are often associated with athletic success, but they can also predispose an athlete to develop an eating disorder. Eating disorders, especially those that involve some form of caloric restriction, can prove to be dangerous for this population given the exertion for which athletes put themselves for practices and competitions. Physical fitness is not only compromised in this population but sport performance, as well. Physical fitness can be characterized by an individual's wellbeing, reduced risk of developing health issues, and the energy one has to complete their activities of daily living (Corbin et al., 2000). The determinants of an individual's physical fitness include muscular endurance, muscular strength, aerobic capacity, and range of motion. El Ghoch et al. (2013) reviewed literature as it relates to eating disorders, physical fitness, and athletic performance. Several studies analyzed in this review of literature indicate that those with restrictive-type eating disorders tend to have lower levels of physical fitness than healthy controls, particularly in terms of muscular strength. While the authors noted the difficulty of studying athletic populations with eating disorders, some evidence suggested that long-term caloric intake restriction was associated with decreases in performance, primarily due to loss of lean mass and depletion of local glycogen stores, decreasing an individual's physical and physiological capacity to perform. Even in participant studies that focused on physical fitness post-re-feeding (subjects BMI $\geq$ 18.5 kg/m^2), muscular strength remained significantly diminished in those with eating disorders compared to controls, indicating that a healthy weight likely has to be maintained long-term before normal levels of physical fitness can be re-established.

Perfectionism can also lead to negative outcomes for performance. While the definition of performance may be considered somewhat subjective in that one's motivation may determine what makes a performance "successful", at the elite level it is generally considered any combination of winning competitions, setting personal bests, and avoiding injury or illness throughout the course of one's career (Raysmith et al., 2019). Higher levels of perfectionism can lead to heightened levels of cognitive anxiety (Koivula et al., 2002). Cognitive anxiety is defined as worries and negative expectations for a given situation, in opposition to somatic anxiety, which is characterized by how one physically feels anxiety. This could include numbness, nausea, and feeling hot (Beck et al., 1988). Many theories relate to the negative effect of cognitive anxiety on performance. The multidimensional theory suggests that while somatic anxiety has an optimal zone, cognitive anxiety is negatively correlated with performance. Thus, as levels of cognitive anxiety increase, performance decreases. In this model, somatic and cognitive anxiety are considered independently of each other. The catastrophe model also relates cognitive anxiety to a decrease in performance outcomes. Somatic anxiety is thought to be related to performance in that there is an optimal zone of stress, until the introduction of cognitive anxiety, at which point performance is drastically reduced (Ford et al., 2017). This decrease in performance outcome can manifest in several ways as a result of cognitive anxiety caused by perfectionism. Lack of or inappropriate attentional focus and maladaptive coping mechanisms, such as behavioral disengagement, can both present as a result of this increase in cognitive anxiety, all of which reduce performance capability. In turn, reduced performance may then create additional anxiety for athletes who are perfectionists as they would likely not obtain the full extent of their standards.

Evidence exists that levels of perfectionism in the general population is increasing over time (Curran & Hill, 2019). This trend is not one to be ignored. The negative effects of perfectionism are outlined above, of which collegiate athletes are generally at more risk for at baseline than their peers. With increasing rates of perfectionism, it can be inferred that collegiate athletes will to some degree fall victim to the trend, too. This means increased rates of mood disorders, OCD, anxiety disorders, and eating disorders in collegiate athlete populations. The well-being of athletes would therefore be negatively affected emotionally, socially, and physically, in addition to negative effects on performance. Emotional distress could occur with the increased onset of mental illness. This could lead to social isolation or apathy towards activities that one typically enjoys, leading to lack of social support. Physical distress can occur as a primary or secondary result of mental illness, including disordered eating. The additional stress on the body from regular vigorous activity would only serve to exacerbate these physical effects. Further exploring this trend and perfectionism's relationship to other traits is therefore of the utmost importance in terms of preserving athlete well-being and performance capability.

Aggression

Aggression in its many forms is undertaken with the aim of harming another who does not wish to receive such harm (Bushman & Huesmann, 2010). It can manifest as verbal attacks to physical attacks, whether that be small acts such as pushing, to more serious acts of assault, battery, or acts with deadly weapons. It is imperative to distinguish that aggressive thoughts or feelings are not defined as acts of aggression. While aggressive thoughts and feelings may indicate an individual's likelihood to commit aggressive acts, they are not observable acts in and of themselves. For something to be considered aggression, it must inherently be a behavior.

Additionally, aggression is deliberate action as opposed to an accidental act. Motor vehicle accidents are a great example, for while they may cause severe bodily harm, they are (as the term implies) not deliberate, and can therefore not be categorized as aggressive behavior (Allen & Anderson, 2017). It is important to note that despite these criteria, aggression occurs less as a dichotomy and more so as a spectrum.

Researchers found a strong correlation between aggression and anxiety in a Korean sample (Chung et al., 2019). This correlation could be a result of cognition surrounding anxiety. Those with higher levels of trait anxiety tend to appraise certain events as being more threatening than they might actually be. This could elicit a variety of responses, such as cognitive and somatic anxiety, but could also result in aggression as a means to protect oneself against the perceived threat. This in turn could create more anxiety in peers, and thus lead to even more aggressive behavior. Additionally, aggression has been found to be related to suicidal ideation in young adults (Hill et al., 2020). Suicidal ideation is a precursor for suicide attempts, making this an area of concern. Conversely, in a study undertaken by James and Patel, no correlation was found between anxiety and aggression in young adults aged 18-27, a comparable age range to the population of interest for this study (2021). This indicates a pressing need for further research in this area for the demographic of interest.

A relationship has also been established between severe mental illness and aggression (Hodgins et al., 2007). It is imperative to clarify that people with mental illness are not inherently aggressive. This is a pervasive stereotype and the purpose of this statement is not to further purport that misinformation. However, certain cognitive patterns that are present in mental illness can incline an individual towards aggressive cognitions and therefore, aggressive behavior. This is important to note as aggressive behavior can be socially ostracizing. Those with

mental illness benefit from social support, and if aggressive behavior stands in the way of such social support, treatment may not be optimized.

In sport, aggression is considered to be a dual-factored characteristic. As defined by Silva (1983), these factors are hostile aggression and instrumental aggression. Hostile aggression is the more prototypical form of aggression compared to the standard definition, as it is performed with the intention of hurting another. Instrumental aggression, on the other hand, is undertaken with the purpose of achieving a goal. For example, a soccer player exhibiting aggressive behavior in order to maintain control of the ball would fall under instrumental aggression. If the same soccer player were to kick another player in the shin purposely with the intention of injuring them, this would fall under hostile aggression. Some may argue this dualistic model of aggression is not useful in the sense that all aggressive behavior, instrumental or otherwise, is executed with a goal in mind, thus rendering the two-factor model ineffective at categorizing behavior (Smith, 1983). It is important to note that instrumental aggression is also distinct from assertiveness. Assertiveness can be defined as displays of intense energy to obtain a goal as opposed to acting aggressively to obtain a goal. One way to visualize this distinction is by imagining the start of a 1500m running race. An act of assertiveness would be for a runner to open with their first lap at a fast pace. An act of instrumental aggression would be if the runner were to lightly elbow another runner so as to achieve a better position on the track or within the group of competitors.

Higher levels of hostile aggression in sport has been shown to translate to increased levels of aggression in day to day life (Keeler, 2007). Instrumental aggression was found to be negatively correlated with life aggression in the same study. This follows due to the nature of both types of aggression. Instrumental aggression is goal oriented and does not include the desire to harm another. On the other hand, hostile aggression is undertaken with the explicit desire to

harm an opponent. This would translate to higher levels of life aggression as they are the same in their end goals of harming another. If one can justify harming another within the realm of sport, it would not be difficult to apply the same cognitions to everyday life. Ultimately, this line of reasoning has its basis in social learning theory (Bandura, 1977). If hostile aggression occurs within the sport context, it may cause others (especially in team sports settings) to adopt that behavior (Lemieux et al., 2002). However, there are counterpoints to this research. The displacement model of the catharsis theory hypothesizes that increased aggression in the sports setting decreases aggression in everyday life as it allows for a release of pent-up aggression (Cox, 2002). The implication of this is that athletes may experience differing levels of everyday life aggression based on the modality of their sport. For example, a boxer would have ample opportunity to exhibit aggressive behavior in their sport relative to a tennis player. Based on the displacement model, the boxer would then subsequently experience lower levels of aggression outside of their sport. It is also imperative to consider that this increased level of aggression in the sport context may beget more aggression from peers, thus making aggression a potentially self-perpetuating cycle.

Based on the negative life implications that are associated with aggression, levels of hostile aggression in sport should be monitored. Hostile aggression is positively correlated with life aggression (Keeler, 2007). Life aggression is associated with mental illness, primarily anxiety disorders, as well as suicidal ideation. Given the proximity that athletes have to aggression, either because of the modality of their sport or teammates or opponents who act aggressively, or any combination of the two, studying aggression in athletes and its effects is imperative.

The hypothesized relationship between aggression and perfectionism in sport

Aggression and perfectionism have been previously linked in general populations, as those that have relatively higher scores in both PC and PS (also commonly referred to as maladaptive perfectionists) tend to exhibit aggressive behavior (Chester, 2015). This can be corroborated by the frustration-aggression hypothesis (Berkowitz, 1989). This theory postulates that negative affect caused by not meeting a goal can cause an individual to act aggressively. Maladaptive perfectionists might be more susceptible to this effect due to the high levels of PC that are characteristic of the subtype. Based on this literature, it is expected that the same relationship between perfectionism and aggression will exist in collegiate athletes.

Determining if there is a link between perfectionism and aggression in the population of interest for this study is of the utmost importance. Aggression and perfectionism, as outlined above, have clear negative implications for the well-being of athletes. If there is a relationship established between the two, any negative effects of either aggression or perfectionism are more likely to compound. As collegiate athletes are also more susceptible to some of the negative effects of perfectionism and aggression, it would therefore only serve to increase this study's relevance.

Methods

Design

This is a quantitative cross-sectional study aiming to measure levels of perfectionism and aggression in collegiate athletes and if a correlation exists between them.

Participants

The sample was recruited from club, intramural, and varsity athletes at various universities in the United States. Participants must be at least 18 years of age and currently enrolled students. Any number of years of participation in the participant's respective sport was included. The convenience sampling method was utilized. Exclusionary criteria are if the individual is not currently on a roster. In total, 71 participants responded to the survey and 59 were included in analysis (n=59). Some respondents could not be included due to incomplete surveys. If a participant missed an entire instrument or more than several items from an instrument, the response was not included in analysis. If a participant missed one or two items from an instrument, the remaining items were averaged to manually input a response for the missing item(s).

Measure	Mean	Standard Deviation
Age	20.66	± 2.12
Years of participation	9.41	± 6.84

Sport	Frequency
Rifle	1

Football	1
Rugby	22
Hockey	20
Track and Field (Mid-Distance/Distance)	7
Cheerleading	1
Soccer	3
Powerlifting	3
Basketball	1
Total	59

Of the participants, 12 were freshmen, 17 were sophomores, 14 juniors, 14 seniors, and 1 graduate student. One participant did not answer this question and therefore was not included in this section.

Grade	Total
Freshmen	12
Sophomore	17
Junior	14
Senior	14
Graduate	1

Instruments

The following self-report measures were used to quantify aggression and perfectionism:

Bredemeier Athletic Aggression Inventory. Hostile and instrumental aggression were measured with the Bredemeier Athletic Aggression Inventory (BAAGI; Bredemeier, 1975). The scale has 30 items measuring hostile and instrumental aggression. Responses are made on a 4-point Likert scale ranging from 1 (strong agreement) to 4 (strong disagreement). Reactive and instrumental scores range from a low of 14, indicating strong agreement with the items on the scale, to a high of 56 indicating strong disagreement; high scores on the scale reflect low levels of hostile and instrumental aggression (Bredemeier, 1975). Cronbach's Alpha scores for the instrumental aggression subscale was .51 and the hostile aggression subscale was .72 in previous studies. Scoring is interpreted as a sum of all responses, where higher scores indicate higher levels of aggression.

State-Trait Anger Inventory - 2. Perceptions of anger were measured using the State-Trait Anger Inventory (STAXI-2; Spielberger, 1999). The inventory consists of six major scales and five subscales measuring the experience, expression, and control of anger. The STAXI-2 is comprised of 57-items measured on a 4-point Likert-type scale (1 = *not at all/almost never*, 2 = *somewhat/sometimes*, 3 = *moderately so/often*, 4 = *very much so/almost always*). State Anger (S-Anger; 15 items) refers to an emotional state consisting of subjective feelings that vary in intensity from mild annoyance to intense fury, accompanied by muscular tension and arousal of the autonomic nervous system. Trait Anger (T-Anger; 10 items) is defined as individual differences in anger proneness, for example the tendency to perceive a wide range of situations as annoying or frustrating. The STAXI-2 also measures the expression and control of anger as either Anger-In or Anger-Out. Anger-In (AX/In; 8 items) refers to the frequency that angry feelings are held in or suppressed (e.g., "When angry or furious, I boil inside but don't show it"). Anger-Out (AX/Out; 8 items) is the frequency in which State-Anger is expressed as aggressive

behavior directed toward other people or objects in the environment (e.g., “When angry or furious I slam doors,” “When angry or furious I argue with others”). Anger-Control In (AX/Con-In; 8 items) is defined as the frequency that individuals attempt to suppress angry feelings (e.g., “When angry or furious I try to simmer down”). Anger-Control Out (AX/Con-Out; 8 items) refers to the frequency that individuals control the outward expression of angry feelings (e.g., “When angry or furious, I control my temper”). Cronbach alpha scores were .96 (state anger), .81 (trait anger), and .77 (anger expression). Scoring for this instrument is a sum of all items, where higher scores indicate higher levels of aggression.

Subscale	**Subscale Items**
State Anger (S-Anger)	1-15
Trait Anger (T-Anger)	16-25
Anger-In (AX/In)	26-33
Anger-Out (AX/Out)	34-41
Anger-Control-In (AX/ Con-In)	42-49
Anger-Control-Out (AX/ Con-Out)	50-57

Sport Multidimensional Perfectionism Scale-2. The Sport Multidimensional Scale -2 (Sport-MPS-2; Gotwals & Dunn, 2009) is based on a multidimensional theory of perfectionism similar to a previous conceptualization of perfectionism (Frost et al., 1990). The purpose of the scale is to measure perfectionism in the sport domain. The scale has six subscales and 42 items answered on a 5-point Likert scale (1 = strongly disagree; 5 = strongly agree). The subscales are Personal Standards (PS; 7 items, e.g., “I have extremely high goals for myself in my sport”), Concern Over Mistakes (COM; 8 items, e.g., “If I play well but only make one obvious mistake

in the entire game, I still feel disappointed with my performance"), Perceived Parental Pressure (PPP; 9 items, e.g., "In competition, I never feel like I can quite meet my parents expectations"), Perceived Coach Pressure (PCP; 6 items, e.g., "Only outstanding performance in competition is good enough for my coach"), Doubts About Action (DAA; 6 items, e.g., "I usually feel uncertain as to whether or not my training effectively prepares me for competition"), and Organization (Org; 6 items, e.g., "On the day of competition, I have a routine that I try to follow"). Cronbach alphas for this scale in previous studies ranged from .85 to .90.

Maladaptive vs. adaptive subscales. Four of the subscales relate to measures of maladaptive perfectionism (COM, PCP, PPP, and DAA), whereas two of the subscales relate to measures of adaptive perfectionism (PS and Org).

Subscale	**Maladaptive vs. Adaptive**	**Subscale Items**
Personal Standards (PS)	Adaptive	1, 8, 17, 21, 23, 33, 36
Concern Over Mistakes (COM)	Maladaptive	2, 10, 16, 24, 28, 32, 39, 42
Perceived Parental Pressure (PPP)	Maladaptive	4, 7, 11, 15, 19, 25, 29, 38, 40
Perceived Coach Pressure (PCP)	Maladaptive	6, 13, 22, 26, 30, 35
Doubt About Actions (DAA)	Maladaptive	3, 12, 14, 20, 31, 37
Organization (Org)	Adaptive	5, 9, 18, 27, 34, 41

Procedure

The survey was administered either via Qualtrics or as a paper document. Direct messages were sent to recruit individuals on varsity and club sports teams and individuals were

encouraged to send the survey on to teammates. Recruiting platforms included Instagram, Snapchat, and iMessage. Before completing any of the self-report measures, participants completed an informed consent document, informing them of the risks and benefits of the study, the purpose, and to inform them that their participation is voluntary and can cease at any time. All data was collected in a way that protected participant confidentiality. This included de-selecting the option to collect IP addresses. Participants first completed questions that asked their age, grade, sport, position in sport, and number of years in their sport. Responses for grade included freshman, sophomore, junior, senior, and graduate student, which were coded to respond to numbers 1-5, respectively. Sport was coded in a similar way from 1-9 to group responses. Averages and standard deviations were calculated for age and the number of years in which participants have been in their sport. A handful of participants responded that they had been in their sport for less than one year, so all responses that were in this format were rounded to 1.

Following this, self-report measures were completed. Participants completed the BAAGI, STAXI, and Sport-MPS-2. All questions were answered on a Likert scale, described above in the instruments section. All responses were coded to respond to a numerical response. Responses were summed for a total of aggression measures (BAAGI + STAXI total), perfectionism measures (Maladaptive and adaptive subscales from the Sport-MPS-2). Means and standard deviations were determined for all of these sums. Correlations were then determined between the perfectionism and aggression measures.

Data Analysis

To analyze the data, it must first be established that there is a normal distribution of data. Once this distribution is established, descriptive statistics will be determined, including means, standard deviations, and frequencies. To answer the research question and test the hypothesis, which is that there will be a positive correlation between perfectionism and aggression in the given sample, a Pearson correlation will be run via Excel. Correlations were determined, as well as p-values. A p value of ≤ 0.05 was considered to indicate statistical significance.

Results

Sums of the following variables were determined: BAAGI responses (instrumental and hostile subscale), STAXI (all subscales), Sport-MPS-2 (maladaptive and adaptive combined), maladaptive perfectionism, and adaptive perfectionism. Means and standard deviations were determined for all of these sums. The following table depicts the score ranges possible for all sums that were considered in analysis:

Scale	Score range
Sport-MPS-2	42-210
BAAGI	30-120
STAXI	57-228
Maladaptive	29-145
Adaptive	13-65
Aggression sum (BAAGI+STAXI)	87-348

The following averages and standard deviations were found:

Scale	Mean	Standard Deviation
Sport-MPS-2	125.5	±22.1
BAAGI sum	74.3	±7.7
STAXI sum	113.2	±16.3
Maladaptive	78.4	±18.4
Adaptive	46.0	±8.6
Aggression sum (BAAGI+STAXI)	188.5	±16.6

When determining distributions for the data, some skewness was found in the majority of scales. The most pronounced skewness was of the BAAGI sum, which exhibited a somewhat dramatic right skew. The adaptive perfectionism subscale exhibited a moderate left skew. This was also the subscale that saw the highest mean relative to total possible score.

Correlations were run to determine the relationships between perfectionism and aggression. This was done in several different ways by considering different sums as listed above. Combinations that yielded statistically significant results are included below.

BAAGI and Maladaptive

Correlation was run between the sum of BAAGI responses and items from the maladaptive subscale of the Sport-MPS-2. Analysis revealed a significant negative correlation, with $R = -0.31$ and $p = 0.0150$.

BAAGI and Sport-MPS-2 sum

Correlation was run between the sum of BAAGI responses and the sum of all items from the Sport-MPS-2. Analysis revealed a significant negative correlation, with $R = -0.34$ and $p = 0.0073$.

Other correlations

Below shows all other correlations that were considered in analysis, including p values and r values.

Variable 1	Variable 2	R	p
Maladaptive perfectionism	Sum of BAAGI and STAXI (aggression sum)	0.05	0.7
Adaptive perfectionism	Sum of BAAGI and STAXI (aggression sum)	0.02	0.88
Sport-MPS-2 sum	Sum of BAAGI and STAXI (aggression sum)	0.05	0.7
Sport-MPS-2 sum	STAXI sum	0.21	0.11
Maladaptive perfectionism	STAXI sum	0.19	0.15
Adaptive perfectionism	STAXI sum	0.12	0.36
Adaptive perfectionism	BAAGI sum	-0.21	0.11

Discussion

Results indicated no significance between the majority of aggression measures with maladaptive, adaptive perfectionism, or perfectionism as a whole. The two correlations that yielded significance were BAAGI sum with the maladaptive subscale and the BAAGI sum with the Sport-MPS-2 sum. Both of these were negative correlations, indicating a reverse of the relationship that we would expect based on the literature review. The strength of the relationships that yielded significance are not particularly strong, with r values of -0.31 and -0.34, respectively.

The highest mean sum, relative to the highest sum possible of a given subscale or measure, was the adaptive subscale mean. Conversely, the lowest mean sum, again relative to the highest sum possible, was the STAXI measure. The means did not have a tendency to be on either extreme of any given scale. Mean values tended to be moderate. However, all of the measures saw relatively high standard deviations. This could either be due to existing individual differences or confounding factors in the sample makeup, sampling method, or both.

There are several limitations to the current study. Information regarding the gender of the participants was not collected. There may be gender differences in perfectionism, aggression, or both. Some research exists to support these gender differences in both factors separately. In one study, it was found that body dissatisfaction (a unique psychological state from which maladaptive perfectionism can be inferred) was a driving factor in dieting behavior in female, but not male, athletes (Prnjak et al., 2019). Another study established underlying neurobiological factors in aggression that can be influenced by gender (Im et al., 2018).

Sport type may also influence perfectionism, aggression, or both. Certain sports seem to have more of a focus on physique, specifically sports that have an “aesthetic” quality to them, such as figure skating or dance. This may then correlate to body dissatisfaction in the athletes in these types of sports. One study on Swedish female figure skaters found that in athletes exhibiting anxiety symptoms, perception of body image was a significant contributing factor (Jederström et al., 2023). While this study included and seemed primarily focused on athletes who are younger than the sample in the present study, it indicates a potential pattern in the formation of attitudes in this sport and therefore, a potential predisposition to perfectionism later on in sport. Similarly, a study that focused on the historical trends in United States women’s gymnasts age, height, weight, and BMI found trends that, up until the mid 1990’s, indicated that smaller gymnasts were favored more and more frequently (Sands et al., 2012). Although this trend may not directly influence current gymnasts, coaches and other supporting staff may very well have attitudes that reflect favoring smaller gymnasts, which may cultivate perfectionistic culture and unhealthy obsession with weight and body image.

Other sports have an inherently aggressive quality to them, specifically contact sports such as rugby, football, or boxing. One study found that contact sport athletes, relative to noncontact sport athletes, exhibited higher mean levels of trait anger, state anger, anger-in, anger-out, and lower mean levels of anger-control-in and anger-control-out (Ahmadi et al., 2011). This can be supported by Bandura’s social learning theory (Bandura, 1977). Additionally, not all sports offer the chance for athletes to be in contact with their competitors, whether accidentally or on purpose. Some sports, though not contact in nature, theoretically provide the opportunity for contact to occur, such as distance running, volleyball, baseball/softball, etc. Other sports, however, do not offer this same “opportunity”, such as diving, gymnastics, or sprinting, as

competitors either compete one at a time or are confined to a certain individual space in which to compete. This could mean that the hostile aggression subscale is not inherently a product of individual athletes but rather a product of the athlete as influenced by their environment.

There may also be perceived social desirability for either aggression or perfectionism and therefore, social desirability to respond in certain ways to these types of questions. Aggression, relative to perfectionism, is viewed as far less socially desirable, which may cause respondents to answer differently. This view on socially desirable behavior may also be influenced by sport type, indicating additional need for this type of study. Additionally, due to gender differences present in perfectionism and aggression, there may also be perceived social desirability of either trait mediated by gender norms and roles.

There was a low number of participants relative to the number of collegiate athletes that there are currently. In December of 2022, the NCAA claimed to have over 520,000 athletes across Division I, II, and III sports. This does not include NAIA or JUCO sports, nor does it include club or intramural sports. Thus, the sample size is incredibly small relative to the amount of college athletes there are. The existing sample was also recruited via convenience sampling, meaning the sample is not necessarily representative of the population of college athletes as a whole regardless of size. Future research should focus on studying a larger sample size, as well as a more randomized sample size, if the goal is to describe college athletes as a whole. It is also possible that there are differences in perfectionism between different levels of college sports, i.e. between different NCAA divisions, varsity vs. intramural vs. club sports, or even between different conferences within the same division, such as “Power 5” conferences compared to relatively less competitive conferences. Or, if a program at a particular college is well-known for

its performance, this may impose additional external pressure on athletes and therefore cultivate perfectionistic tendencies.

Demographic information regarding race/ethnicity of the participants was also not collected, meaning it is possible that the sample is racially or ethnically homogenous.

Conclusion

The data for this study does not suggest any relationship between perfectionism and aggression. Due to the size of this study and the existing literature, the nature of the relationship of perfectionism and aggression is inconclusive. Future research should be directed towards obtaining a larger sample size, as well as observing sport specific or gender specific effects.

Review of Literature

Key Search Terms and Search Engines

Key search terms included “perfectionism”, “perfectionism in athletes”, “athlete aggression”, “Sport aggression”, “perfectionism and aggression”. Databases that were searched include Google Scholar and the Georgia Southern University Library Database.

Review

Perfectionism Is Increasing Over Time: A Meta-Analysis of Birth Cohort Differences From 1989 to 2016 (Curran & Hill, 2019)

Meta-analysis (n = 246) that studied three subtypes of perfectionistic attitudes: self-oriented perfectionism, socially prescribed perfectionism, and other-oriented perfectionism. Based on the analysis of the researchers, all three subtypes increased over time. These findings indicate the increasing pertinence of establishing a relationship between perfectionism and aggression. If levels of perfectionism increase over time and a relationship between perfectionism and aggression exists, an increase in perfectionism consequently leads to an increase in aggression. Maladaptive effects can be caused as a result of both perfectionism and aggression. The participant studies generally had homogenous populations, possibly introducing bias and lack of generalizability. This also makes it possible that the changes in perfectionism over time in reference to populations of college athletes would also be a worthwhile contribution to the literature.

Clarifying the construct of perfectionism (Stairs et al., 2011)

Attempt to better measure the multidimensional nature of perfectionism by creating a comprehensive measure, deemed the M-CUP (Measure of Constructs Underlying Perfectionism)

by the authors. 15 existing scales of perfectionism were utilized. 9 hypothesized dimensions of perfectionism were created by the authors, and every individual item was assigned to one of said dimensions. 3 raters were trained one dimension at a time. Once trained, they rated each item from every scale for that dimension from a scale of 1-5, with 1 meaning not related at all and 5 being exactly matching the dimension. Raters were blinded to which scale the item came from and which dimension it was hypothesized to fit into categorically. From this, dimensions of perfectionism were identified, as well as dimensions that were excluded. For example, dimensions that were included were "black and white" thinking, high standards, and the preference for order. Excluded dimensions included things that were determined to be precursors for the trait of perfectionism as opposed to reflecting the trait itself, such as high expectations from parents in youth.

Perfectionism, Motives, and Barriers to Exercise from a Person-Oriented Approach (Vicent et al., 2021)

This study focused on different sources of motivation for exercise among groups with varying levels of perfectionism. The authors generated a two-factor model of perfectionism, which was broken down into perfectionistic strivings (PS) and perfectionistic concerns (PC). From this, four sub-populations were generated, consisting of non-perfectionists, adaptive perfectionists, maladaptive perfectionists, and moderate perfectionists. PS and those populations with higher PS were positively correlated with both intrinsic and extrinsic motivation, whereas groups higher in PC were only correlated with extrinsic motivation unless the effect of PS was considered. Per the authors, this suggests that PC is the explanatory factor in variance, which is the aspect of perfectionism that concerns the self-critical aspects. The authors noted that one

limitation to this study is that actual physical activity was not measured and was drawn from a sample of university students and thus should be generalized “with caution”.

The role of perfectionism in body dissatisfaction (Wade & Tiggeman, 2013)

This study focused on adult women aged 28-40 (*n*=1083) to establish a relationship between perfectionism and body dissatisfaction. Self-reported measures of perfectionism were measured using Frost’s Multidimensional Perfectionism Scale. Self-reports of height, weight, and ideal weight were also recorded. Certain dimensions of perfectionism were positively correlated with an aspect of body dissatisfaction, specifically ideal silhouette. Doubt about actions, concern over mistakes, and organization were all found to be independently correlated to ideal silhouette. The latter of those two was also independently correlated with desired BMI. One limitation of this study is that weight was self-reported, where numbers may not be as exact as if collected by the researchers or may have been intentionally higher or lower due to feelings of shame about one’s current weight. This study also only recruited adult women of certain ages as participants, whereas body dissatisfaction, perfectionism, and eating disorders can affect a much broader population.

Perfectionism in Anxiety and Depression: Comparisons across Disorders, Relations with Symptom Severity, and Role of Comorbidity (Wheeler et al., 2011)

Participants consisted of individuals diagnosed with one of four categories: social anxiety disorder (SAD), pathological demand avoidance (PDA, either with or without agoraphobia), obsessive-compulsive disorder (OCD), and depression (*n*=214). Several perfectionism scales were administered to participants (including Frost Multidimensional Perfectionism Scale, Hewitt

Multidimensional Perfectionism Scale, Self-Criticism Perfectionism Scale, Maladaptive Evaluative Concerns Perfectionism, Evaluative Concerns Perfectionism Scale) as well as Depression and Anxiety Stress Scales (DASS). MANOVA was utilized to analyze data in several different ways. Results indicate that symptom severity and comorbidity were both correlated with maladaptive perfectionism.

Aggression and Violence: Definitions and Distinctions (Allen & Anderson, 2017)

The authors sought to compare and contrast different categorizations and taxonomies of aggression. Violence is established as a subtype of aggression, but not the only type. Aggression is presented as typically being defined in dichotomous terms. Some that the authors present are hostile and instrumental aggression, direct and indirect aggression, displaced and triggered displaced aggression, active and passive aggression, and several more. The first of those dichotomies is the most frequently used in measures of sport aggression. The authors also discuss concepts that are similar to aggression but not included in its scope. This includes concepts such as antisocial behavior, coercion, aggressive cognition, and aggressive feelings. Both coercion and antisocial behavior are considered to not be aggression because they are broader in their definitions. Aggressive cognitions and feelings are not considered to be aggression because though they can lead to aggressive behavior, they are not in and of themselves aggressive behavior.

The Differences in Sport Aggression, Life Aggression, and Life Assertion Among Adult Male and Female Collision, Contact, and Non-Contact Sport Athletes (Keeler, 2007)

161 athletes who participated in club sports were studied regarding aggression concerning the amount of contact in their sport and their gender. Data was collected using self-reported measures of life aggression (Buss-Durkee Hostility Inventory), life assertion (Rathus Assertiveness Scale), and sport aggression (BAAGI-S). In this study, men were found to have a significantly higher level of life assertion, but no other gender differences were found. Instrumental aggression was found to be negatively correlated with life aggression, whereas hostile aggression was positively correlated with life aggression. The two measures of sport aggression were also negatively correlated with each other. This research backs the social learning theory, in that expression of aggressive behavior translates to behavior in contexts outside of sport. The authors indicated a need for future researchers to use larger sample sizes.

Maladaptive Perfectionism's Link to Aggression and Self-Harm: Emotional Regulation as a mechanism (Chester, 2015)

This study specifically focuses on undergraduate individuals (n = 155) in which measures of perfectionism and aggression were collected. Methods of collection included self-report surveys, including the ASP-R, Angry Mood Improvement Inventory, Brief Aggression Questionnaire, and Taylor Aggression Paradigm. Maladaptive perfectionism, which is defined by the author as a discrepancy between an individual's standards and perceived expectations of performance, is positively correlated by the author with aggression. A secondary portion of the data collection involved an adaptation of the voodoo doll task, in which the voodoo dolls represent the self (and thus one's tendency to self-harm). One potential drawback of this study is that participants were offered course credit for participation, which may skew results in that participants may have differing levels of perfectionism than the general population.

Aggression and Social Anxiety Among Young Adults (James & Patel, 2021)

100 participants (n = 100) were administered self-reporting measures on aggression and social anxiety, including a scale that measures social anxiety specifically in university students, as well as the Buss-Perry Aggression Questionnaire. There was found to be no significant relationship between aggression and anxiety in this sample. Convenience sampling was utilized, which is a limitation of this study. There were also found to be significant gender differences in aggression between males and females, with males exhibiting higher levels of aggression.

Association between anxiety and aggression in adolescents: A cross sectional study (Chung et al., 2019)

Two thousand four hundred and thirty-two Korean students who were between 7th -12th grade were recruited for this study, of whom 1933 completed the self-report questionnaire (n = 1933). The Revised Children's Manifest Anxiety Scale and the Aggression Questionnaire were utilized to quantify aggression and anxiety. Also collected were demographic information regarding age, gender, medical history, and risk-taking behavior (such as smoking and alcohol consumption). MANOVA was utilized to show correlations between subtypes of aggression, which by the authors were defined as physical aggression, verbal aggression, hostility, and anger. Total aggression was also considered. Males were more likely to exhibit aggressive behavior. Also correlated with aggression were chronic conditions such as scoliosis and myalgia. Anxiety was found to be correlated with aggression. One limitation of this study is that the sample was drawn from a relatively homogenous population, meaning that there could be cultural differences if the study were replicated in another country or in a sample with different ethnic makeup.

Investigating the Prevalence and Risk-Factors of Depression Symptoms Among NCAA Division I Collegiate Athletes (Cox et al., 2017)

1169 (*n*=1169) participants were sampled in this study, drawn from Division I collegiate athletes. Participants were surveyed utilizing the Center for Epidemiological Studies Depression Scale (CES-D), a measure that has been validated for use in collegiate populations. Other covariates were collected utilizing questions oriented towards demographics, including class status (freshman, sophomore, junior, senior, graduate, or other), sport season status (in-season vs off-season athletes), and scholarship status. Sport season status and class status were both found to have significant differences in levels of depression. In regards to sport season status, in-season athletes experienced symptoms of depression to a greater degree. This could potentially indicate a need for mental health interventions in the population and investigation into the psychological mechanisms as to why this is occurring. In regards to class status, lowerclassmen (defined as freshmen and sophomores) exhibited significantly higher levels of depression than upperclassmen (juniors, seniors, graduates). This could indicate that those who remained in collegiate sports developed more adaptive coping mechanisms. One drawback of this study is that the measure in and of itself is not a clinical measure of depression, and thus cannot directly measure rates of depression among the participants.

Eating Disorders in Athletes: A Review of the Literature (Byrne & McLean, 2001)

Meta-analysis that highlights the weaknesses and gaps in the literature on this research topic. The majority of studies included in this meta-analysis, according to the authors, were uncontrolled studies. This includes using self-report measures, which are unlikely to be accurate in this context. Argues that sport specificity when studying disordered eating tendencies should

be considered to uncover relevant differences in occurrence. Studies that parsed out weight-dependent and aesthetic sports saw higher rates of eating disorders in these groups when compared to other sports and control groups. Gender differences in studies are generally not analyzed. Some studies had inappropriate controls, with one study having participants with amenorrhea as a control, which is correlated with eating disorders. The authors outline guidelines for selecting ideal subjects to allow for better comparisons in future studies.While this is not a direct measure of levels of perfectionism in the population of collegiate athletes or in specific sports, it does indicate a possibility for higher degrees of perfectionism in this population, as perfectionism can be a contributing factor to eating disorders. Increasing amounts of literature exploring the nuances of eating disorders in athletes can help to establish the importance of uncovering perfectionism trends in the same population.

Self-reported hostile aggression in contact athletes, no contact athletes, and non-athletes (Lemieux et al., 2002)

Study that compared athletes and non-athletes in terms of hostile aggression utilizing Buss and Perry's Aggression Questionnaire. A total of 194 (n=194) participants were recruited, 96 in the athlete group and 98 in the non-athlete group. The final analysis included 86 athletes and 86 non-athletes. "Non-athlete" was defined as having no varsity participation in a sport, meaning participants could have club or intramural experience, or no sport participation at any level. Physical size of athletes was a co-variate of the study. A 2x2 ANOVA was run to determine significant differences between the groups. It was found that there was no significant difference between the athlete and non-athlete group (p=0.116) or the combined effect of athletic participation and size (p=0.628). However, there was a significant difference if physical size was

considered independently (p=0.024). The methodology of this study is slightly flawed in that the "non-athlete" group includes individuals with sport participation. It is possible that because of these parameters a significant difference does exist between athletes and non-athletes in this data set and was simply not found because of how groups were divided. The theoretical basis for the initial hypothesis of the study is applied to the present study.

Examining the definition and assessment of social support: a resource for individuals and families (Cooke et al., 1988)

Twenty-two (*n*=22) first-time parents were sampled in this study. Semi-structured interviews were conducted to determine the extent to which they had social support. Themes were identified in the data by a team of researchers as to what can be defined as the categories of social support: emotional support, esteem support, appraisal support, network support, and altruistic support. These arose from, per the participants, 11 different sources of support. The most common sources of social support in this study were from a spouse, close friend, or relative. From these themes and sources, the researchers developed a social support inventory. Though the inventory was developed specifically for parents and families, this same type of study could be done with athletes as participants to create a similar social support inventory. This could help to design interventions for athletes who are struggling with the implications of having high levels of aggression and/or perfectionism.

Self-esteem and perfectionism in elite athletes: effects on competitive anxiety and self-confidence (Koivula et al., 2002)

178 (n=178) elite athletes from Sweden were administered self-report surveys regarding anxiety, self-esteem, and perfectionism. The underlying goal of the study was to uncover patterns in how anxiety can manifest in elite athletes. The Competitive State Anxiety Index, or CSAI-2, was utilized to measure cognitive state anxiety, somatic trait anxiety, and self-confidence. An abbreviated version of the Basic and Earning Self-Esteem Scales (SE-B) was utilized to measure self-esteem. In this scenario, the author's elected to utilize 12 of the total 42 items on the full SE-B. Frost's Multidimensional Perfectionism Scale (MPS) was used to measure perfectionism. Of the six total subscales from this, only three were utilized: personal standards, concern over mistakes, and doubts about actions. When analyzing self-esteem as the independent variable with three subscales from the MPS as the dependent variables, it was found that personal standards, concern over mistakes, and doubts about actions all independently had a significant effect on self-esteem ($p<0.0001$). When utilizing subscales of the CSAI-2 as the dependent variables, self-confidence and cognitive state anxiety were both found to have a significant effect on self-esteem ($p<0.001$ and $p<0.0001$, respectively). Overall, this establishes a relationship between these variables and thus illustrates potentially negative effects of certain dimensions of perfectionism. This relates to the current study in that establishing a relationship between perfectionism and aggression would likely illustrate similar negative outcomes for athletes.

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