Despite the multitude of published accounts that focus on "aggressive athletes," scientific investigation into aggression and violence within an athletic population has been surprisingly absent. Publications have often been more editorial in nature, with scientific rigor, sound methodology, and empirical exploration appearing to be secondary concerns. The present review seeks to summarize what is currently known about aggression and violence in sports through actual empirical investigation. The information presented herein was synthesized from the inclusion of studies that met strict scientific and methodological inclusion criteria, representing less than one-third of published studies on the subject over the past 30 years.
1. Introduction

Published accounts centering on the notion of the “aggressive athlete” have a long, storied history, with one of the first of these publications appearing in 1974 (Lefebvre & Passer, 1974). Authors and researchers have approached the topic from a number of angles. However, while interest in sport-related aggression has been particularly strong at different times in human history, the empirical investigation of the subject has often failed to match the level of curiosity associated with it. Historically, comments on aggression and violence in sports have come from the fields of sociology, law, medicine, and even political science as well as psychology. In many cases, it appears that social commentary was a primary objective for these published accounts, leaving scientific rigor, methodological concerns, and a systematic exploration of aggression as secondary concerns.

Due to the empirical limitations associated with the study of violence and aggressive behavior in athletic environments, core questions have failed to be sufficiently or definitively answered. More specifically, lack of systematic investigation has led to an inability to provide clear answers regarding whether individuals who participate in regular athletic activities are inherently more violent due to their own personal characteristics or whether the environment associated with competitive sports promotes aggression and antisocial behavior. Even more damaging, however, is the ongoing perpetuation of stereotypes and half-truths regarding violent athletes due to the reported “findings” of numerous studies with questionable methodology.

At the heart of the methodological problems associated with the study of aggression and violence in sports is a lack of agreement on what constitutes non-sanctioned aggression within an athletic environment. Aggression as an empirical construct in sports promotes aggression and antisocial behavior. Even more one part of the problem associated with studying violent behavior in sports. Empirical investigation in the area is confounded by limitations regarding the focus of the behavior in question (i.e., off-field versus on-field acts), as well as the disconnection between perceptions of aggression versus actual engagement in violent acts by research participants. In addition, the failure to compare responses of athletes to non-athlete cohorts is an additional limitation that consistently appears throughout the published literature.

The purpose of the current review is to summarize what is known about aggression and violent behavior in athletic environments while placing greater emphasis on information that has been gleaned from empirical investigation into the subject. It is noteworthy that no review of this kind has been conducted, and that many articles, book chapters, and commentaries on this subject have not used scientific rigor in determining their inclusion criteria. A secondary aim of the current review is to increase the knowledge base of aggression and violent behavior in sports and to make this topic readily accessible to those who hope to expand the scientific exploration of this topic. To that end, we believe that the synthesis of the information presented here represents the most current understanding of the subject found in a single source. However, the manner in which the review was conducted may be just as important as its finding, as we know of no other place where the examination of aggression and violent behavior in sports was compiled in such an objective and scientific manner. In essence, the structure and format of the review presented here were not created a priori. Instead, it was dictated by the findings within the existing literature on aggression and violence, with the inclusion of studies being dictated by scientific and methodological criteria.

2. Method

At first glance, the totality of published articles on violence and aggression in sports is staggering. In conducting this review, the authors initially compiled all primary sources in the social and behavioral sciences germane to the topic of aggression in athletics. To that end, between May of 2008 and December of 2009 reviewers searched “sport” or “ath” AND “aggress” or viole*” as descriptors in the PsychInfo database, with the “*” symbols representing Boolean operators. The time period for the initial search was established from January, 1980 through December, 2009 and yielded 332 publications of varying media, 239 of which were individual studies located in peer-reviewed journals, with conferences, book chapters, and dissertations excluded. However, after an initial examination of these materials, it was determined that a significant number of articles were editorial in nature, commenting on perceived violent underpinnings within the athletic population that were often unsubstantiated through science. Thus, it was decided that the
Aggression in sport has not only been studied in conjunction with performance, but also various outside influences. Russell and de Graaf (1985), for example, tested their hypothesis that the athletes’ aggressive behavior is related to lunar cycles, but their analyses failed to provide any statistically significant findings. Another environmental examination was an extension of the heat-aggression phenomenon to the world of sport which posits that extremely hot weather is associated with increased aggression and violence. Reifman, Larrick, and Fein (1991) investigated this relationship employing hit-by-pitches (N = 826) as a proxy for aggression during the 1986, 1987, and 1988 seasons of Major League Baseball. Results of multiple regression analyses, while controlling for wildness (i.e., walks, wild pitches, passed balls, and errors) and game attendance, indicate a positive and significant relationship between heat and aggressive behavior. However, the authors noted that the results should be interpreted with caution due to the limitations of the data and methodology. Further research is needed to fully understand the complex interplay between environmental factors and aggressive behavior in sport.
<table>
<thead>
<tr>
<th>Author(s)</th>
<th>Date</th>
<th>Sport</th>
<th>Sample</th>
<th>Competitive level</th>
<th>Measure(s)</th>
<th>Statistical test(s)</th>
<th>Finding(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brunelle, Janelle, and Tennant Bushman and Wells</td>
<td>1999</td>
<td>SO</td>
<td>57 male athletes</td>
<td>Middle</td>
<td>State-Trait Anger Expression Inventory</td>
<td>ANOVA, Correlations, Repeated MR</td>
<td>The role-playing group controlled their angry behaviors better than non-treatment and anger awareness groups over the season</td>
</tr>
<tr>
<td>Coulomb and Pfister</td>
<td>1998</td>
<td>HO</td>
<td>191 male athletes</td>
<td>National,</td>
<td>Trained coders observing videotapes</td>
<td>PCA, ANOVA</td>
<td>Instrumental aggression more frequent during 1st half while hostile aggression more frequent during 2nd; higher level players more instrumental</td>
</tr>
<tr>
<td>Coulomb-Cabagno and Rascal</td>
<td>2006</td>
<td>HB, SO</td>
<td>180 male and female games</td>
<td>National,</td>
<td>Trained coders observing videotapes</td>
<td>Confirmatory factor analysis, X², MANOVAs</td>
<td>Male players more aggressive; higher level players use more instrumental aggression</td>
</tr>
<tr>
<td>Engelhardt</td>
<td>1995</td>
<td>HO</td>
<td>4,240 male games</td>
<td>Professional</td>
<td>Archival analysis</td>
<td>Correlation</td>
<td>Inconclusive whether hostile aggression a positive or negative influence to athletic performance</td>
</tr>
<tr>
<td>Frank and Gilovich</td>
<td>1988</td>
<td>HO, FB</td>
<td>Male games from 1970 to 1986</td>
<td>Professional</td>
<td>TAT</td>
<td>Correlation, Mann–Whitney, X², X²</td>
<td>Black uniformed players choose more aggressive sports to play and commit more aggressive acts and ideations; referees penalize black uniform teams more often</td>
</tr>
<tr>
<td>Gee and Leith</td>
<td>2007</td>
<td>HO</td>
<td>30 male teams</td>
<td>Professional</td>
<td>NA</td>
<td>X²</td>
<td>North American players commit more aggressive and non-aggressive infractions than European-born players</td>
</tr>
<tr>
<td>Gee and Sullivan</td>
<td>2006</td>
<td>HO</td>
<td>79 male athletes</td>
<td>High School</td>
<td>Trained coders observing videotapes</td>
<td>MANOVA</td>
<td>81% of aggressive acts went unnoticed by referees; more aggression was displayed when the game differential was smaller</td>
</tr>
<tr>
<td>Grossman and Hines</td>
<td>1996</td>
<td>HO</td>
<td>871 male athletes</td>
<td>Professional</td>
<td>Archival analysis</td>
<td>X²</td>
<td>North American players commit more penalty minutes than European-born players</td>
</tr>
<tr>
<td>Guilbert</td>
<td>2006</td>
<td>VAR</td>
<td>300 male athletes</td>
<td>National,</td>
<td>92-item violence in sport questionnaire</td>
<td>CSO, PCA</td>
<td>Athletes exert different forms of violence depending on their sport type and competitive level</td>
</tr>
<tr>
<td>Harrell</td>
<td>1980</td>
<td>BB</td>
<td>45 athletes</td>
<td>High School</td>
<td>Anger Rummation Scale</td>
<td>PCA</td>
<td>Aggression from opponents lead to reciprocating aggression</td>
</tr>
<tr>
<td>Maxwell</td>
<td>2004</td>
<td>VAR</td>
<td>305 male and female athletes</td>
<td>College</td>
<td>Archival analysis</td>
<td>2-Factor MANOVA</td>
<td>Provocation and anger rumination were predictors of subsequent aggression</td>
</tr>
<tr>
<td>McGuire, Widmeyer, Courneya, and Carron Vaglum</td>
<td>1992</td>
<td>HO</td>
<td>223 male athletes</td>
<td>Middle and High School</td>
<td>Questionnaires</td>
<td>Regression</td>
<td>Home team hostile aggression may enhance crowd influence and performance, and away team hostile aggression may dampen performance</td>
</tr>
<tr>
<td>Rascal, Coulomb, and Pfister</td>
<td>1998</td>
<td>HB</td>
<td>240 athletes</td>
<td>Middle and High School</td>
<td>Perception of Success Questionnaire</td>
<td>Exploratory FA, MANOVAs</td>
<td>Players’ ability to control on-field aggression and off-field antisocial behavior increased chances to continue participation in sport</td>
</tr>
<tr>
<td>Reifman, Larrick, and Fein</td>
<td>1991</td>
<td>BB</td>
<td>3 seasons of male games</td>
<td>Professional</td>
<td>Archival analysis</td>
<td>MR</td>
<td>Higher temperature of weather may increase hostile aggression</td>
</tr>
<tr>
<td>Russell</td>
<td>1981</td>
<td>HO</td>
<td>203 male athletes</td>
<td>Professional</td>
<td>Conservatism Scale, official records</td>
<td>Split-half reliability, correlations ANOVAs, correlations</td>
<td>Conservative athletes rated less aggressive by their coaches; those identified as leaders by teammates less physically aggressive</td>
</tr>
<tr>
<td>Russell and de Graff</td>
<td>1985</td>
<td>HO</td>
<td>426 male games from 1978–1979 season</td>
<td>Professional</td>
<td>13 judges’ ratings on importance of match, official records</td>
<td>X², ANOVA</td>
<td>Crowd size has negative relationship to performance and aggression of visiting teams</td>
</tr>
<tr>
<td>Russell and Russell</td>
<td>1984</td>
<td>HO</td>
<td>504 male games from 1983–1984 season</td>
<td>Professional</td>
<td>Archival analysis, lunar cycles</td>
<td>X², ANOVA</td>
<td>Aggression is not related to lunar cycles</td>
</tr>
<tr>
<td>Secunda, Blau, McGuire, and Burroughs Thomas, Reeves, and Smith Thompson</td>
<td>2006</td>
<td>SO</td>
<td>1,140 male games</td>
<td>Professional</td>
<td>Archival analysis</td>
<td>X²</td>
<td>Lower temperature of weather may increase hostile aggression</td>
</tr>
<tr>
<td>Timmerman</td>
<td>2007</td>
<td>BB</td>
<td>347 male games from 1960 to 1992 and 2000 to 2004</td>
<td>Professional</td>
<td>Archival analysis</td>
<td>Logistic Regression, Percentages, Logistic regression</td>
<td>Inter-personal aggression is not determined by the 8 sets of antecedents the authors studied</td>
</tr>
<tr>
<td>Weinstein, Smith, and Wiesenthal</td>
<td>1995</td>
<td>HO</td>
<td>75 male athletes</td>
<td>Bantam, Pre-professional</td>
<td>Brannon Masculinity Scale, Bem Sex Role Inventory</td>
<td>Correlations, Regression, ANOVAs, correlations</td>
<td>Aggression actions can be dependent on situational circumstances such as batter race, pitcher birthplace, and context of retaliation</td>
</tr>
<tr>
<td>Widmeyer and Birch</td>
<td>1984</td>
<td>HO</td>
<td>1,176 male games from 1956 to 1957, 1961 to 1962, 1966 to 1967, and 1971 to 1972 seasons</td>
<td>Professional</td>
<td>Archival analysis</td>
<td>Pearson product moment correlations MANOVAs, ANOVA</td>
<td>Aggression partially stems from players’ adherence to beliefs about appropriate masculine behavior</td>
</tr>
<tr>
<td>Widmeyer and Mcguire</td>
<td>1997</td>
<td>HO</td>
<td>840 male games from the 1987 to 1988 season</td>
<td>Professional</td>
<td>Archival analysis</td>
<td>MANOVAs, ANOVA</td>
<td>Aggression performed early in game play may serve as a foundation for winning, but should be tapered as the game progresses over time; hostile aggression does not lead to team performance</td>
</tr>
</tbody>
</table>

**Table 1**

On-field.
significant linear relationship between the association under investigation, \( \beta = 0.11 \). In addition, wildness was negatively correlated with hit-by-pitches, which implies that it does not mediate the relationship between temperature and aggression.

The relationship between crowd density, aggression, and performance as a function of game location was tested using data from official records of all games in the 1978–1979 Western Hockey League season \((N = 826; \text{Russell, 1983})\). Crowd density was determined by the ratio of game attendees to seating capacity of the arena, aggression by a composite index of physical and verbal aggression to game penalties, and performance by number of goals scored. Results showed that crowd size and performance were negatively correlated with aggression of visiting teams, but unrelated to that of home teams. \( \text{Russell (1983)} \) suggested that visitors are ultimately less aggressive in larger crowds because of the intuitive nature to escape a dangerous situation, and that player aggression tended to increase during intra-divisional home games.

### 3.1.3. Game situation

In the tradition of aforementioned research where aggression is conceptualized as a combination of observations (i.e., 13 “aggressive” hockey penalties), some researchers have studied the construct in the context of various game play scenarios. For example, \( \text{Widmeyer and McGuire (1997)} \) extended \( \text{Russell (1983)} \) research on intra-divisional aggression, but employed a distinct conceptualization and more in-depth analyses to test the association. Here, the connection between frequency of competition and aggression was examined in a sample of 840 regular season games (345 intra-division and 495 inter-division) during the 1987–88 NHL season. Results indicated significant differences in amount of aggression taking place during intra-divisional and inter-divisional games. Fighting, roughing, high-sticking, and slashing showed the largest within-between effects, estimates ranging from 0.50 to 0.63. To test the frequency of competition theory, the hypothesis that games later in the season (increased frequency) would involve more aggression was tested. Minor, major, and non-aggressive penalties were all subject to competition effects but post hoc analyses revealed that a significantly greater number of minor and major penalties occurred in later intra-divisional games. Significantly fewer non-aggressive penalties were observed. These data suggest that the frequency one team plays another is positively associated with aggressive on-ice behavior. Thus, in the NHL, it appears that familiarity may indeed breed contempt.

Aggressive behavior has also been examined from the standpoint of location. In an archival analysis of 1140 games from the English Football Premiership, aggressive behavior was measured by frequency of yellow cards (i.e., cautions of misconduct to players from referees), red cards (i.e., incurred through two yellow cards or a stand-alone misconduct as determined by referees), and sanctioned penalties (\( \text{Thomas, Reeves, & Smith, 2006} \)). Results from a series of chi-squared tests revealed that away teams received significantly more yellow cards during decided and tied games than home teams. No significant differences were found for red cards or sanctioned penalties.

The study of aggression in sports has become increasingly complex over the time period of this review. Sophisticated statistical analyses have allowed researchers to simultaneously test multiple hypotheses while controlling for a host of alternative explanations. For example, \( \text{Timmerman (2007)} \) conducted a study in baseball using a complex logistic regression model that measured the connection between aggression (as measured in hit-by-pitches; HBP), variables of game situation (i.e., hitters appeared at the plate in the half inning after their own pitcher had hit an opposing batter; hitting a batter who previously hit a homerun; batters at the plate immediately following teammates homerun), region of pitcher (Southern, non-Southern), and race of the player in Major League Baseball. Control variables included batter ability, pitcher ability, and score differential. In total, 74,197 games from 1960 to 1992 and 2000 to 2004 were analyzed, totaling 5,680,808 batting appearances. Of these appearances, 33,517 were HBP events, 27,667 of which were utilized in the analyses. Results indicate that, over time, African-American batters were less likely to be hit than Latinos or Whites from Southern pitchers, indicative of the decline of overt racism in baseball. Additionally, consistent with the “culture of honor” theory (i.e., aggression is justified in defending one’s honor) found to be more prominent among citizens in Southern United States regions, noting that Caucasian Southern pitchers are more likely to have a HBP event. Furthermore, Caucasian batters were significantly more likely to be hit by a Southern pitcher after hitting a home run and in retaliation than African-American batters. This finding countered the authors’ hypothesis that Caucasian pitchers expressed aggression in a symbolically racist manner. Taken together, the results suggest that aggressive actions can be dependent on situation circumstances such as batter race, pitcher birthplace, and within the context of retaliation.

A unique inclusion to the body of literature on aggression and game situations was \( \text{Frank and Gilovich (1988)} \) work on the relationship between uniform color and aggression. For the National Football League (NFL), aggression was measured from 1970 to 1986 by number of yards penalized and, for the NHL, by number of minutes penalized during the 1985–86 season. The average aggression ranking of teams with black uniforms was calculated and compared to the average rank of all teams. As predicted, teams with black uniforms in both the NFL and NHL were more aggressive, although aggressive penalties (e.g., roughing the passer) were not discriminated from non-aggressive infractions (e.g., too many men on the field). Further analyses suggested that referees penalize black uniformed players more often than non-black uniformed players. Also, participants who wore black uniforms chose more aggressive sports to play and displayed more aggressive ideations. According to authors, further research in this area might help clarify whether this trend resulted from players’ self-perceptions or some function of the way in which players wearing black uniforms are observed or perceived.

### 3.1.4. Culture

Although less common, aggressive on-ice behavior has been studied via inter-cultural differences among North American-born and European-born NHL players. An investigation using the chi-square statistic suggests that North American players do, in fact, incure more penalty minutes than their European counterparts (\( \text{Grossman & Hines, 1996} \)), although aggressive and non-aggressive penalties were not distinguished from one another. \( \text{Gee and Leith (2007)} \) attempted to replicate this statistical trend, but included position, NHL experience, birth place, game location, type of penalty, score differential, the period during which the infraction occurred, and player’s team status (winning, losing, tied) in analyses. Results of 200 games, including 219 North American and 135 European players from 30 NHL teams who scored 20 or more points, supported previous findings, suggesting that professional North American ice hockey players commit significantly more aggressive and non-aggressive infractions than European-born players.

### 3.1.5. On-field archival studies summary

The studies included within this subsection highlight several aggression-related findings. First, it appears that aggression performed early-on during competition may serve as a foundation for success, demonstrating to opposing teams a willingness to engage in assertive play within the rules of the game to gain an advantage. However, based on the findings presented here, aggression should be tempered as the game progresses in order to avoid engaging in behaviors that could lead to unnecessary sanctioned penalties. Although it appears that archival studies have difficulty determining whether aggression serves as a positive or negative influence to athletic performance, when aggression is explored vis-à-vis
situational characteristics, some interesting findings are also revealed. Specifically, when focusing on the location of play, home team aggression may serve to enhance crowd influence as well as athletic performance, whereas aggression performed “on the road” appears to dampen performance. This finding may be more complex than it first appears, however, noting that crowd size and athletic performance may also serve to reduce the aggression of visiting teams. Finally, other situational factors, such increased temperature, within-division games conducted throughout the course of a competitive season, and wearing black uniforms may serve to increase on-field aggressive acts.

Although there is a substantial amount of empirical work on athletic aggression within the archival domain, the nature of archival research makes it difficult to draw meaningful conclusions. The majority of the literature in this area involves a longitudinal examination of correlational data, leaving various threats to internal validity. Thus, it is nearly impossible to rule out alternative explanations unless the authors take explicit statistical measures to address these confounds. Thomas et al. (2006) investigation of the relationship between aggression and game location discussed above is an example. It may be that visiting players feel the need to be more aggressive to produce successful results or that referees are simply biased in favor of the home team. Unfortunately, the sort of analyses described within this section precludes such a distinction.

The problem with drawing meaningful conclusions through archival research is further exemplified by Frank and Gilovich (1988) study, where the authors show that black uniformed players had more penalties than other players and follow-up studies have revealed that referees are biased to giving more penalties to black uniformed players. As will be demonstrated in another section, this finding may also be skewed by the fact that referees have been shown to be biased towards certain players, leading Frank and Gilovich (1988) to make conclusions based on archival data that may simply be due to observer bias. Given the inherent difficulty making definitive statements using archival analyses, the results within this subsection are equivocal as to the role of aggression in sport. In certain circumstances, it appears to be an advantage and, in others, a disadvantage. Unfortunately, these patterns are not consistent across studies, preventing professionals from forming a solid empirically-based understanding of the literature.

That said, just as Reifman et al. (1991) used secondary predictors to statistically control for potential confounds within his multiple regression analyses, future work in sport-related aggression may also include these more methodologically appropriate models. In other words, researchers who hope to explore athletic aggression in the future may consider the use of more well-designed regression analyses from which to fashion their exploration of the aforementioned issues. If this is taken into consideration, archival research provides investigators with the opportunity to study a given phenomenon longitudinally; that is, aggression can be understood from a developmental perspective in any particular context, provided that the methodology and statistical analyses are sound.

3.2 Self-report studies

3.2.1 Psychometric studies

Before beginning an in-depth discussion of empirical studies that utilize self-reports in assessing on-field aggression, it is worth noting than investigation into the statistical applicability of two measures, the Aggression Questionnaire (Buss & Perry, 1992) and the Bredemeier Athletic Aggression Inventory-Short Form (BAAGI-S; Wall & Gruber, 1986), met inclusion criteria. The original BAAGI (Bredemeier, 1986) contains 28 items and, although the authors report low internal consistency coefficients on the instrumentational aggression subsection, they ultimately found this instrument to be acceptable for studying aggression in sports. Bushman and Wells (1998) evaluated whether the Aggression Questionnaire, a measure of trait aggressiveness, could predict “non-laboratory” aggressive behavior in 91 high school hockey players and found that their results indicated that trait aggressiveness was predictive of overall minutes penalized and, more specifically, aggressive penalties such as fighting, roughing, tripping, and slashing.

3.2.2 Individual differences

In conceptualizing athletic aggression, level of masculinity has been hypothesized to influence sport-related aggressive and violent behaviors in adolescents (Weinstein, Smith, & Wiesenthal, 1995). In one investigation, Weinstein et al. (1995) assessed masculinity with the Brannon Masculinity Scale (Brannon & juni (1984); violence by number of fights and total penalty minutes; and competence by a Coaches’ Competence Ranking and Teammates’ Competence Ranking. Results of regression analyses revealed that levels of masculinity was a significant predictor of fights per game and penalty minutes per game, uniquely accounting for 23% and 36% of the variance, respectively. Thus, the hypothesis that hockey violence partially stems from a players’ adherence to beliefs about appropriate masculine behavior was supported.

Interestingly, older players with a higher proportion of fights were ranked higher by coaches and teammates in terms of competence. However, older players with a higher ratio of penalty minutes were ranked higher in competence only by their teammates and not by their coaches.

Conservatism, which is an individual characteristic focusing on the degree to which players respect and submit to their coaches (Wilson, 1973), has also been examined as a potential influence on aggressive behavior. Specifically, one study attempted to identify the “psychomotor factors” that predicted success at the offensive backfield position for 24 male volunteer tryouts for the University of Central Florida football team (Secunda, Blau, McGuire, & Burroughs, 1986). Interviews were conducted with both players and coaches in order to identify the salient qualities of the position. Psychological, biological, and perceptual-motor characteristics were obtained and recorded during the first three days of spring practice. The 16PF, fourth edition (1968) was employed to assess personality style; biological variables were determined as a function of physiologically-demanding tasks. Perceptual-motor variables included speed, pass receiving ability, and perceptual-motor speed. Football playing ability was the dependent measure, calculated through weighted mean of the coaches’ scores on each player. Results of a multiple regression analysis indicated that psychological variables of aggressiveness and conservatism were positive and significant predictors of ability. This may be because these psychological qualities facilitate a players’ ability to handle both the high physical demands of football (aggression) while also capable of possessing and displaying respect and submitting to authority (conservatism).

In parallel, Russell (1981) examined the relationship between conservatism, leadership, and aggression using 203 Canadian ice hockey players. Specifically, players completed the Conservatism Scale (Wilson, 1973), which measured participants along two continuums: conservatism/liberalism and realism/idealism. Two modes of aggressive behavior were defined and measured: official record (physical and challenge to authority) and third party ratings from coaches, trainers, and managers. Results indicated a significant relationship between physical aggression and violations which represented a challenge to authority (i.e., less conservatism). Furthermore, both of these factors were significantly correlated with the staff’s ratings of their players’ aggression. In addition, those who were identified as
leaders among their teammates were significantly less likely to be physically aggressive in comparison to those who were not leaders.

Although aggressive behavior is sometimes associated with positive traits (e.g., perceived athletic ability), it has also been shown to relate to negative outcomes. For example, Ommundsen and Vaglum (1992) prospectively examined the effects of sport-specific influences on continued participation in 223 male adolescent soccer players. These authors used a 12-item “antisocial” scale consisting mostly of probes for drug/alcohol abuse and illegal activities (e.g., vandalism) as well as a 24-item measure of aggressive emotional reactions in soccer, soccer enjoyment, relationships with soccer peers, and other variables. Regression analyses yielded a significant negative relationship between aggressive emotional reactions and continued participation. The interaction between antisocial behavior and aggressive emotional reactions on soccer dropout was also significant, with the effect more pronounced for younger boys (12–13 years old). It was concluded that, in general, players who were better able to control emotional on-field aggression and off-field antisocial behavior were more likely to continue their soccer participation.

3.2.3. Sport differences

On-field aggression studies utilizing self-report measures have also examined how the type of sport moderates the relationship between anger, rumination, and aggression actions. For example, Guilbert (2006) measured 300 male athletes from basketball, table tennis, karate, swimming, and shooting sports across national and regional/local competitive levels on a 92-item instrument (De Singly, 1992) evaluating “violent” (i.e., physical, verbal, and psychological aggression as well as cheating) and non-violent behaviors in their respective sport. Results revealed that 77% of the athletes responded that violence does occur in their sport, with a percentage breakdown of psychological (27.7%), verbal (26.3%), physical (19%), and cheating (4%). When examining the differences between sports, patterns did exist, but remained consistent within the sport. For example, table tennis and swimming violence was typically verbal and psychological, whereas basketball and karate were more physical in nature.

In another study examining the relation between sport type and aggression, Maxwell (2004) measured anger in 305 male and female athletes from a variety of team (e.g., football and hockey) and non-team (e.g., running and tennis) sports using the Anger Rumination Scale (Sukhodolsky, Golub, & Cromwell, 2001). Provocation and anger rumination scores were significantly correlated with the athletes’ self-reports of aggressive behavior, with no differences found between gender, competitive level, or sport type. Instead of suggesting that individuals who act aggressively be channeled into other sports, the authors concluded that rumination prevention techniques (e.g., thought stopping or thought switching) may help reduce subsequent aggressive behaviors.

3.2.4. Injury

Ironically, the relationship between injury and aggression appears to have largely ignored, given that only one study met the inclusion criteria for this review. That study, conducted by Thompson and Morris (1994), explored the relationship among anger, aggression, attention, and stressful life events to injury by sampling 240 high school football players from six high schools in western Georgia. Results indicated a high incidence of injury among the sample (36.7%) and, relevant for the purpose of the current review, participants who were either high or low in externalizing aggression scores were more likely to be injured than those with less extreme or average externalizing scores. The authors suggested that, generally, too much or too little aggression increased the likelihood of injury and that athletes who successfully avoided injury were those that exhibited controlled aggression in sporting environments.

3.2.5. On-field self-report studies summary

Overall, the studies of on-field aggression that utilize self-report measures reveal several salient factors. Not only are measures such as the BAAGI-S and the Masculinity Scale able to predict aggressive penalties in ice hockey or the incidence of hostile aggression, these instruments might serve as effective tools in identifying which players are more predisposed to aggressive actions. This identification might be important for many adolescent athletic organizations because in these players, controlling on-field aggression and off-field antisocial behavior increased the chances of continued participating in sports. Similarly, noting that rumination may contribute to aggressive on-field behavior, the identification of this dysfunctional cognitive coping mechanism and the implementation of ruminative prevention techniques may actually help to reduce aggressive on-field behavior.

Although archival data are equivocal regarding aggression and its association with success or athletic ability, inferences drawn from self-report research are more straightforward. For example, controlled aggression appears to reduce the chances of an athlete becoming injured. In addition, when assessed via post hoc ‘paper-and-pencil’ measures, both coaches and players viewed aggression as positively associated with ability, competence, and leadership. This effect is even more pronounced for athletes who participate in “contact” and “team” sports as well those athletes who score high on measures of interpersonal conservatism. That is, the type of sport and the level of conservatism appears to moderate the relationship between aggression and ability. Unfortunately, “how” or “why” this effect materializes (i.e., the putative mediators) are nearly impossible to test with these models. Is aggression more valued after the fact in sports where physicality is a large part of on-field activity, or does aggression truly aid athletes’ performance? Though relatively absent in this body of literature, mediation analyses (e.g., path analyses) would be helpful in answering these questions and providing a clearer direction for future research.

3.3. Observed on-field aggression

3.3.1. Predicting aggression

Research meeting inclusion criteria in this domain began with the work by Harrell (1980) who focused on identifying predictors of athletic aggression during a contest by having observers randomly rate high school basketball players as a means of assessing the aggressive behaviors the player and their opponent committed, as well as other game factors (e.g., shots taken, height of player). Results indicated that the strongest indicator of both a player’s observed aggression as well as the number of fouls he committed was the amount of aggression committed against him by the opposing team’s players, with shooting percentage and turnovers following as the next strongest predictors.

3.3.2. Level of competition

A group of researchers conducted a series of related studies to test the relationship between competition level and aggression with three moderating variables: goal orientation, time of game, and gender tested separately. First, Rascale, Coulomb, and Pfister (1998) studied the relationship between goal orientations (task and ego) and aggression across physical education classes, interscholastic competitions, and league games comprised of 240 male handball athletes. Task orientation can be defined as the extent to which an individual’s aim is to master the necessary skills required to perform their sport at a high level. Conversely, ego orientation involves an individual’s desire to demonstrate masterful performance relative to the performance of other athletes. Utilizing the Perception of Success Questionnaire, the authors found that ego–goal orientation, but not task orientation, was significantly correlated with both hostile and instrumental aggression (i.e., high ego–goal players exhibited more instrumental aggression than low-ego players). It is also noteworthy
that league players’ hostile aggression was primarily directed at referees, while the hostile aggression of physical education athletes was directed at teammates. These findings reveal significant differences only for ego−goal orientations, with league players scoring significantly higher than interscholastic and physical education players. In addition, there was a significant main effect for sport context on both instrumental and hostile aggression, with league teams scoring significantly higher than both of the other groups on instrumental aggression, and league and physical education games scoring higher than interscholastic contexts on the incidence of hostile aggression. Taken together, the data suggest that an ego−goal orientation is statistically related to on−field aggression and that this mindset is more likely to occur within the context of game performance as a player’s sport level increases.

Coulomb and Pfister (1998) also studied whether competition level or time of game influenced the level and type of aggression, measuring French soccer championship games from national level (NL), regional level (RL), and departmental level (DL). Results confirmed the authors’ hypotheses that hostile aggression would occur more frequently during the second half of play than the first while instrumental aggression would have the opposite pattern. Additionally, NL players displayed higher levels of instrumental aggression than RL and DL players, while DL players displayed significantly greater levels of hostile aggression than RL and NL players. Although provocation or tiredness can weaken inhibitions, the authors concluded that players at higher levels tend to master their aggression and have learned to use instrumental aggression to improve the cost−profit ratio of committing an illegal act over the course of competition.

Finally, Coulomb−Cabagno and Rascle (2005) analyzed the relationship between gender, competitive level of sport (national, regional, and departmental), and aggression in 90 handball and 90 soccer games in French athletes. Two raters observed videotaped games, and results revealed that male players committed significantly more acts of instrumental and hostile aggression than females, regardless of sport or competitive level. Finally, as competitive levels increase, the pattern of increased instrumental aggression and decreased hostile aggression was more clearly observed.

3.3.3. Officiating and game characteristics

Coulomb−Cabagno, Rascle, and Souchon (2005) also examined incidences of perceived aggression by male soccer referees. In their study, 26 male and female French national championship soccer games were analyzed, with a different referee for each game. Videotapes were observed and coded with each aggressive act rated as either instrumental or hostile. Results revealed that male soccer players committed significantly more aggressive actions per game than female players, but female soccer players were significantly more likely to receive a sanctioned penalty from referees than male players, suggesting possible referee gender stereotyping. Gee and Sullivan (2006) examined on−field aggression in their study of aggressive behavior in male ice hockey players. Results from two coders on videotaped games revealed that 81% of the aggressive acts went unnoticed by the game official, and that significantly more aggressive acts were committed when the score differential was smaller compared to larger. Additionally, no relationship was found between aggression and team status, player position, or period of play.

3.3.4. Intervention research

In what appears to be the only study of its kind, Brunelle, Janelle, and Tennant (1999) carried out an aggression intervention evaluation within the context of sports. These authors investigated the effects of role−playing (i.e., modeling and behavioral rehearsal), self−monitoring, and a control group on anger control in 57 male soccer players. Results indicate that the groups were not significantly different on pre−treatment anger measures as evaluated by Spielberger et al. (1983) State−Trait Anger Expression Inventory (STAXI), and that angry feelings were consistent across all groups during the study. Post−intervention results, however, demonstrated that both the anger awareness and role−playing groups may reduce angry behavior. However, the role−playing group was, in fact, more effective at controlling their angry behavior than the self−monitoring and control groups.

3.3.5. Observed on−field studies summary

Observed on−field studies suggest that aggression from opponents typically leads to reciprocating aggression on the part of athletes. Aggression can be further fueled by an ego−goal orientation (i.e., desire to demonstrate mastery relative to the performance of other athletes), and is more likely to occur in males, later in the game, or when the score is closer and the competitive level of the sport is lower. Thus, it appears that athletes at the highest−level are more likely to exhibit instrumental forms of aggression, with this effect especially pronounced for participants with ego−goal orientations. This suggests that higher level athletes are, indeed, using aggression within the context of competition, but athletes who emphasize individual achievements seem even more likely to do so. From a functional perspective, the ability to utilize aggression instrumentally appears to diminish toward the latter stages of a contest (when physical exhaustion may become more of a factor) and it appears that one way to reduce the amount of expressed aggressive actions during competition is through the use of role−playing and behavioral rehearsal techniques. Finally, despite the fact that male athletes are likely to display more aggressive behaviors than female athletes across all domains, it appears that female athletes are penalized more often per aggressive act.

In general, the paucity of literature in the domain of observed on−field aggression – particularly in the oft−studied realm of hockey – is especially troubling in light of Vokey and Russell’s (1992) plea for more research in the area. Work in this area is dominated by the contributions of Coulomb and her colleagues who examined aggression in multiple contexts through videotaped observation of handball and soccer contests. Nonetheless, the work by Coulomb and her peers is noteworthy, as these authors employ advanced methods of systematic on−field observation as well as appropriate analytical and methodological approaches which allow for more solid conclusions to emerge from the data. More importantly, the group’s attempt to answer multiple questions in the realm of applied sport psychology has yielded a number of promising findings. Hopefully their work will serve as a prototype for future scientific inquiry in the area of aggression and violence in sports, most notably where studies examine aggressive behavior as both an outcome measure as well as a predictive variable.

4. Off−field aggression

Off−field investigations into aggression that met inclusion criteria for this review involve studies that focus on athletes’ behavior while they are not participating in their competitive sport. Similar to the preceding section, the term “off−field” is used as a proxy for any environment where athletic activities do not occur and the analysis that follows includes both self−report studies and direct observations of off−field aggressive acts. If authors obtained any of their data through direct examinations of off−field aggression, such as laboratory studies and longitudinal measurements, these studies are located in the observed section of off−field aggression (Table 2).

4.1. Self−report studies

4.1.1. Physical aggression and antisocial behavior

In contrast to the findings that linked athletic participation to aggression from archival studies, Lenzi, Bianco, Milazzo, Placidi,
Table 2
Off-field.

<table>
<thead>
<tr>
<th>Author(s)</th>
<th>Date</th>
<th>Sport</th>
<th>Sample</th>
<th>Competitive level</th>
<th>Measure(s)</th>
<th>Statistical test(s)</th>
<th>Finding(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boeringer</td>
<td>1999</td>
<td>INT</td>
<td>477 male and female students</td>
<td>College</td>
<td>Self-report questionnaire</td>
<td>T-tests, cross-tabs</td>
<td>Athletes support rape mythenrs more than non-athletes</td>
</tr>
<tr>
<td>Burton and Marshall</td>
<td>2005</td>
<td>VAR</td>
<td>169 male and female students</td>
<td>Middle School</td>
<td>YSR</td>
<td>T-tests, Hierarchical MR</td>
<td>Male athletes were more aggressive off-field; sports participation is a risk factor for off-field antisocial behavior</td>
</tr>
<tr>
<td>Ciairano, Gemelli, Molinengo, Musella, Rabaglietti, and Roggero</td>
<td>2007</td>
<td>VAR</td>
<td>159 male and female athletes, 28 male and female coaches</td>
<td>Primary and High school</td>
<td>MMHSQ, MHMPQ</td>
<td>Hierarchical linear regression</td>
<td>The more self-regulatory efficacy players have the less off-field aggression they exhibit</td>
</tr>
<tr>
<td>Choi, Parrott, and Cowan</td>
<td>1990</td>
<td>WL</td>
<td>6 male athletes</td>
<td>Ages 21–29</td>
<td>BDHI, POMS, RPPT, urine tests, interview Violence measure, Total Scale of Antisocial Behavior, Bergen Questionnaire</td>
<td>ANOVAs</td>
<td>Aggression and hostility were greater in steroid users than non-users</td>
</tr>
<tr>
<td>Endresen and Olieus</td>
<td>2005</td>
<td>VAR</td>
<td>477 male students</td>
<td>Middle School</td>
<td>Karolinska Scales of Personality</td>
<td>MADM, ANOVA, Mann-Whitney</td>
<td>Current steroid users scored significantly higher than past or non-users on indirect and verbal aggression</td>
</tr>
<tr>
<td>Galligan, Rencz, and Hansen</td>
<td>1996</td>
<td>WL</td>
<td>70 male athletes</td>
<td>Lifting at least 3 times weekly for one year</td>
<td>DDHQ, SES, Conflict Tactics Scale</td>
<td>Percentages, Correlations, Hierarchical MR</td>
<td>No associations were discovered between athletic membership and verbal, physical, or sexual aggression</td>
</tr>
<tr>
<td>Gidycz, Warkentin, and Orzechowski</td>
<td>2007</td>
<td>INT</td>
<td>425 male students</td>
<td>College</td>
<td>PSAP, ROAS, Lifetime History of Aggression Questionnaire</td>
<td>Percentages, Correlations, Hierarchical MR</td>
<td>T-tests High-contact athletes had significantly higher mean of aggressive responses than low-contact athletes</td>
</tr>
<tr>
<td>Huang, Cherek, and Lane</td>
<td>1999</td>
<td>VAR</td>
<td>16 male athletes</td>
<td>Ages 15–18</td>
<td>BDHI, BAAGI-S, Rathus Assertiveness Schedule</td>
<td>T-tests, Percentages</td>
<td>Males blamed rape offenders less and victim more</td>
</tr>
<tr>
<td>Jackson</td>
<td>1991</td>
<td>VAR</td>
<td>165 male and female athletes</td>
<td>College</td>
<td>Self-report questionnaire</td>
<td>ANOVAs, Correlations</td>
<td>No differences in sport contact levels on instrumental, hostile, and life aggression or assertion</td>
</tr>
<tr>
<td>Keeler</td>
<td>2007</td>
<td>VAR</td>
<td>161 male and female athletes</td>
<td>National, regional, local</td>
<td>BDHI, BAAGI-S, Rathus Assertiveness Schedule</td>
<td>Correlations, T-tests, linear regressions</td>
<td>Athletes more aggressive than non-athletes; males higher on indirect aggression; women higher on verbal aggression and irritatingness</td>
</tr>
<tr>
<td>Kiss and Gaines</td>
<td>1993</td>
<td>FB, BB</td>
<td>530 male students, 140 male athletes</td>
<td>College</td>
<td>SES, HTWS</td>
<td>MR, Discriminant analyses</td>
<td>Formal sport involvement, mainly in varsity football and basketball players, predicted sexual aggression</td>
</tr>
<tr>
<td>Lenzi, Bianco, Milazzo, Placidi, Castrogiovanni, and Becherini</td>
<td>1997</td>
<td>VAR</td>
<td>76 male and female athletes, 488 male and female students</td>
<td>Most participants ages 15–43</td>
<td>BDHI</td>
<td>Discriminant analyses, T-tests</td>
<td>Athletes more aggressive than non-athletes; males higher on indirect aggression; women higher on verbal aggression and irritatingness</td>
</tr>
<tr>
<td>Linville and Huebner</td>
<td>2005</td>
<td>VAR</td>
<td>235 male and female students</td>
<td>Middle and High School</td>
<td>YRBS, self-report</td>
<td>Correlations, T-tests, linear regressions</td>
<td>Number of sport team involvement was not related to violent activities</td>
</tr>
<tr>
<td>Miller, Melnick, Farrell, Sabo, and Barnes</td>
<td>2006</td>
<td>VAR</td>
<td>608 male and female students</td>
<td>Ages 13–16</td>
<td>Family Violence Scale, Nonfamily Violence Scale</td>
<td>Percentages, MR</td>
<td>Longitudinal study revealed that athletic involvement was not related to physical aggression off-field</td>
</tr>
<tr>
<td>Murnen and Kohlman</td>
<td>2007</td>
<td>VAR</td>
<td>29 studies with 16 on athletes</td>
<td>College</td>
<td>Unknown</td>
<td>Meta-analysis</td>
<td>Athletic participation and self-report sexual aggression had a moderate association</td>
</tr>
<tr>
<td>Smith and Stewart</td>
<td>2003</td>
<td>VAR</td>
<td>192 male and female athletes, 90 male and female students</td>
<td>College</td>
<td>SOQ, RSAS, SES, HTWS</td>
<td>Correlations, MANOVAs, Univariate F-tests, post hoc Tukey</td>
<td>No differences between rape-supportive attitudes, hostility toward women, or sexually aggressive experiences across contact levels and non-athletes; males endorsing rape-supportive beliefs more likely to engage in sexually aggressive acts</td>
</tr>
<tr>
<td>Van Goorzen, Frijda, and Van de Poll</td>
<td>1994</td>
<td>VAR</td>
<td>40 female athletes</td>
<td>Unknown</td>
<td>TAT, autonomic arousal, aggressive behavior, STAS, ASQ</td>
<td>ANOVAs, correlations</td>
<td>Women engaging in aggressive sports not more prone to anger</td>
</tr>
</tbody>
</table>

Castrogiovanni and Becherini (1997) studied the connection between gender, sports involvement, and aggression using the Italian translation of the Inventory for Assessing Different Kinds of Hostility (Buss & Durkee, 1957). Participants included 76 athletes and 488 non-athletes. And, despite the size discrepancy between the groups, the authors’ results revealed that both athletic men and women were more aggressive than their counterparts in the general population. Within the athlete group itself, men showed higher scores on measures of indirect aggression, while women showed greater scores on verbal aggression and irritability.

In a study of athletic involvement and antisocial behaviors, Burton and Marshall (2005) focused on whether participation in sports functioned as a protective factor for at-risk adolescents in Scotland. Researchers assessed adolescents’ level of extracurricular involvement and delinquent acts measured by the Youth Self-Report (YSR; Achenbach & Rescorla, 2001), as well as any previous participation in activities and social support outlets. Results revealed that males reported significantly more rule-breaking and aggressive behavior than females. Additionally, sport involvement was positively related to aggressive behavior. These results suggest that mere participation in extracurricular activities does not serve as a protective factor for youth considered at-risk for engaging in delinquent behavior, but rather functions as a risk factor because participation in sports was associated with higher incidence of engaging in aggressive behavior. In a similar study, Linville and Huebner (2005) were interested in studying the influence of participation in extracurricular activities on violent activities (i.e., carrying a weapon and physical fighting) among 235 rural African-American students in grades 8–12. Each student completed a survey that contained the Youth Risk Behavior Survey (CDC, 1988), a measurement by Small and Riley (1995), and were presented with questions assessing frequencies of weapon carrying, physical fighting, and descriptive data on extracurricular activities.
(i.e., non-school clubs, volunteer work, church, and exercise). When examining the number of sport teams in which the student was involved, correlations revealed no significant relationships between frequencies of weapon carrying or physical fighting.

### 4.1.2. Aggression and coaching

Ciairano et al. (2007) were interested in identifying the best predictors of physical aggression towards peers, sport-related stress, self-efficacy, and coach influence in 159 male and female adolescent (M = 14.9, SD = 2.4) athletes in Italy. Sports included track and field, martial arts, swimming, classical and modern dance, volleyball, basketball, and soccer. Athletes completed a questionnaire that measured stress, self-efficacy not directly related to sports, and physical aggression. Coaches (N = 28, M = 31.5, SD = 10.6) completed a questionnaire that assessed five scales of self-efficacy towards preventing risk behavior in their players. Results indicated that as self-regulatory efficacy (i.e., ability to resist peer pressure, violating laws/rules, and sexual desires) decreased, non-sport physical aggression towards peers significantly increased. Finally, coaches’ self-efficacy measures had some predictive value to players’ self-regulatory efficacy, suggesting that positive coaching roles lead to higher athlete self-efficacy, which in turn reduces non-sport physical aggression towards peers.

### 4.1.3. Comparing aggression across sport contact levels

Endresen and Olweus (2005) studied the longitudinal effects of power sport (i.e., boxing, weightlifting, wrestling, martial arts) participation on antisocial involvement in 477 Norwegian male students over a two-year period (ages 11–15 throughout study). Antisocial involvement was measured using Bendixen and Olweus (1999) Bergen Questionnaire on Antisocial Behavior and Total Scale of Antisocial Behavior as well as a five-item violence measure. Results revealed that boys who participated in power sports were significantly more likely to have higher levels of antisocial involvement and violence outside of sports (i.e., starting fights, using weapons, vandalism, theft, truancy) than non-participating power sport students. Furthermore, taking up a power sport was indicative of an increase in antisocial behaviors and suspending a power sport was attenuated these behaviors, though not immediately after quitting the sport. Keeler (2007) compared 161 men and women that participated in collision (rugby), contact (soccer), or non-contact (volleyball) sports in terms of their hostile aggression (i.e., intent to harm another), instrumental aggression (i.e., intent to harm another in pursuit of a non-aggressive goal), life aggression, and life assertion. Results revealed no significant differences between any of the three sport contact levels and the four dependent variables of interest. This finding suggests that women and men do not differ in levels of instrumental aggression. However, there was a positive relationship between men and women’s hostile aggression scores and their life aggression scores, as well as an inverse relationship between their level of life aggression and their instrumental aggression in sports. In addition, men scored significantly higher on the assault scale while women scored significantly higher on the indirect hostility scale.

### 4.1.4. Sexual and relational aggression

Another aspect of violence and aggression which has been studied in the context of athletics is an athlete’s likelihood of engagement in sexual or relational aggression. The incidence of sexual assault has been increasingly reported within the last decades on college campuses across the nation (White, Donat, & Bondurant, 2001 as cited in Brown, Sumner, & Nocera, 2002). As a result, there has been a rising concern within the social sciences to understand the underlying factors existent in these types of behaviors as a means of establishing preventative tactics.

In a similar line of investigation, numerous researchers have studied college athletes’ rape-supportive attitudes in an attempt to find a connection between these attitudes and sexual aggression. Rape myths are defined as beliefs and situational definitions that excuse rape or define assaultive situations as something other than rape (Burt, 1980 as cited in Boeringer, 1999). In 1999, Boeringer examined rape-supportive attitudes among a sample of male college athletes. Results suggest that athletes responded positively to rape-supportive statements 56% more than did controls. These results imply a relationship between rape-supportive attitudes and membership in athletic organizations. Murnen and Kohlman (2007) furthered this line of research by conducting a meta-analysis on 29 studies (16 on athletes) to assess the relationship between athletic participation and fraternity membership to actual sexual aggression in college males. When examining the association between athletic participation and self-report sexual aggression, a significant moderate association was found (d = .31).

Jackson (1991) also explored rape experiences and attitudes of 165 college athletes (65% male) through a self-report questionnaire that measured perpetration and victimization experiences, blame attributions for rape, and demographic information. For male perpetration experiences, 17% reported they had held or kissed a woman against her will, 16% sexually fondled a woman against her will, 27% reported verbally coercing (e.g., making threats) a woman into having sex, 11% had physically assaulted a dating partner, and 4% reported that they physically forced a woman to have sexual intercourse against her will. For female victimization experiences, 21% reported being held or kissed against will, 24% reported being sexually fondled against will, 14% reported having given in to sex because of coercion or verbal pressure, 10% had been physically assaulted on dates, and none reported being raped. Results of independent t-tests indicated that the victim was blamed significantly more often for the occurrence of acquaintance rape than for stranger rape.

Smith and Stewart (2003) compared the differences in sport achievement orientation, rape-supportive attitudes, sexually aggressive experiences, and hostility toward women across contact athletes (i.e., physical contact permitted by sport rules), non-contact athletes, and non-athletes in England. Results revealed no significant differences between rape-supportive attitudes, hostility toward women, or sexually aggressive experiences. However, men who were more competitive and win-oriented, as depicted by higher scores on the sport achievement orientation measure, reported being more sexually aggressive. These results also supported the notion that men who endorse more rape-supportive beliefs are more likely to engage in sexually aggressive acts against women. Perhaps the study’s most salient finding was that contact sport athletes did not engage in more sexually aggressive acts than non-contact sport athletes and non-athletes.

One of the aims of Gidycz, Warkentin, and Orchowski (2007) study was to explore the relationship between athletic participation to perpetration of verbal, physical, and sexual aggression. The study assessed 425 undergraduate males from an NCAA Division I school on sexual aggression and the use of verbal and physical aggression in conflict resolution in dating relationships. Authors hypothesized that athletic team participation would be positively correlated to all measured forms of aggression and forms of perpetration aggression. However, no significant statistical associations were discovered between athletic membership and verbal, physical, or sexual aggression, nor did such membership have predictive influence to any aggression type.

Koss and Gaines (1993) examined alcohol use, fraternity affiliation, and athletic participation as predictors of sexual aggression in male college students. Participants were assessed on their level of sexual aggression and their level of hostility toward women. Although sports involvement was evaluated in various ways (e.g., club sports, surveying how participants keep up with sports news), only formal involvement, particularly in varsity football and basketball players,
was predictive of sexual aggression. However, multiple regression analyses revealed that athletic involvement accounted for less variance than nicotine use and intensity of alcohol consumption.

4.1.5. Off-field self-report studies summary

Results from self-report studies that focus on off-field aggression demonstrate several key findings. Despite popular belief, athletic involvement is not consistently related to off-field physical aggression. Also, the ability to resist impulses, such as peer pressure and sexual desires, is associated with diminished levels of off-field aggression and appears to be influenced by coaching. Athletes have been shown to be generally more aggressive than non-athletes, with differences between aggressive expressions often being based primarily on gender. However, aggression studies that focused on gender and level of competition have demonstrated conflicting findings, with no significant differences being reported between gender and type of sport.

Regarding the level of sexual aggression in athletes, results illustrated that lower levels of sports participation, not higher, were correlated with sexual aggression against women. There is also conflicting evidence on whether sports involvement influences acceptance of rape myths and sexual aggression. Some studies demonstrated that athletes support rape myths more than non-athletes and a meta-analysis on athletic participation and self-reported sexual aggression had a moderate association. Other research, however, revealed no significant differences between rape-supportive attitudes, hostility toward women, or sexually aggressive experiences across contact levels and non-athletes. Moreover, some research showed no significant relationship between athletic membership and verbal, physical, or sexual aggression. Only one study suggested that formal involvement in varsity football and basketball was predictive of sexual aggression, but multiple regression analyses revealed that athletic involvement accounted for less variance than nicotine use and intensity of alcohol consumption. This last finding suggests that there might be other factors at work in the relationship between sports, rape, and relational aggression.

4.2. Observed off-field aggression

4.2.1. Physical aggression and antisocial behavior

Miller, Melnick, Farrell, Sabo, and Barnes (2006) conducted a longitudinal study of 608 adolescents (M = 14.5 years old) from 1989 to 1996, with six measurement periods. During measurement one, descriptive characteristics were collected on gender, race, age, socioeconomic status, binge drinking frequency, and athletic participation. During measurement three, violence variables were collected, including nonfamily violence (i.e., beat up someone, fought with gang) and family violence (i.e., hit, pushed, or shoved adult family member, threw something at family member). Analyses revealed that athletic participation did not account for differences in physical aggression in non-sport contexts, although “jock” identity (i.e., how much individuals and others subjectively identify as a jock; marked enthusiasm about sports as a means of popularity, status, or belonging) did play an influential role.

4.2.2. Comparing aggression across sports levels

Another study linking athletic participation and aggression was Huang, Cherek, and Lane (1999) laboratory study, which is also one of the few laboratory studies that addressed the relationship between type of sport and aggression. Sixteen males (aged 15–18 years) were divided into a high-contact sport group and a low-contact sport group. Researchers measured aggression by participants’ performance on the Point Subtraction Aggression Paradigm, a laboratory task that permits participants to respond to a fictitious opponent in aggressive or non-aggressive ways (Cherek, 1981). Results indicated that high-contact sport group had a significantly higher mean of aggressive responses in a session than the low-contact sport group.

4.2.3. Off-field observed studies summary

Findings from longitudinal and laboratory studies that focus on aggression using direct observations are somewhat contradictory. On the one hand, athletic participation failed to account for differences in physical aggression in non-sport contexts, but increased personal identification as an athlete appears to play a role in off-field aggression. Moreover, athletes who played high-contact sports were found to respond to an aggressive laboratory paradigm more aggressively than athletes who played low-contact sports. As with much of the literature on aggression in non-sport contexts, consensus has not yet been definitively reached regarding whether or not athletes are more aggressive in their daily lives than non-athletes.

Overall, the literature on aggression outside the field of play appears as a number of individual studies that neither support nor refute previous studies in the topic area. Additionally, factors that were present in several studies pose threats to internal validity and preclude a discussion of causality. Several studies are conducted with small sample sizes, such as Burton and Marshall (2005), whose results may have been confounded due to the low number of adolescents who did not report engaging in any extracurricular activities (n = 3) or Huang et al. (1999) laboratory study, which consisted of a total of 16 athletes. Finally, Gidyetz et al. (2007) proposed that due to the low number of athletes who participated in the overall sample, there was not enough statistical power to detect significant differences. Other off-field studies fail to report effect sizes, provide alternative conclusions for their findings, address the notion of social desirability, or use comparison groups when constructing their methodologies. For example, Boergering (1999) findings may be explained as an overall rape climate at a particular university. Similarly, Endresen and Olweus (2005) may suffer from selection effects as well as fluctuations in antisocial behavior that may be due to the impact of a particular type of sport and normal developmental effects as well as the characteristics of the training environment. Thus, the majority of the off-field research on aggression in non-sport contexts, may have limitations in their utility as a result of their reliance on self-reports and a general lack of validity checks used when collecting data.

5. Perceptions and judgments of aggression

Unlike the studies discussed in the previous two sections, studies aimed at evaluating the perceptions and judgments of aggression within sports provide a unique insight into the cognitive interpretation of the topic. A study by Guibert (2008) highlighted this body of literature, demonstrating that 420 athletes from basketball, karate, table tennis, swimming, shooting, soccer, volleyball, judo, and tennis defined violence and accidents differently, and that violence and accidents are interdependent. The following section reviews a variety of different research methods, including direct observational judgments and paper-and-pencil vignettes, which target the cognitive impressions by both athlete and non-athlete populations of aggressive actions in sports. This distinctive grouping of studies serves to provide insight into how athletes and non-athletes perceive the field behaviors that frequently occur during sporting events (Table 3).

5.1. Self-report studies

5.1.1. Moral reasoning

The construct of sportsmanship has developed into an ever-increasing topic of interest within sport aggression research. Although this construct has not always been labeled as sportsmanship, or its predecessor, sportsmanship, a variety of studies aimed at assessing approval or disapproval of injurious or unsuitable actions in sports have been conducted over the past three decades. These studies have
Table 3
Perceptions.

<table>
<thead>
<tr>
<th>Author(s)</th>
<th>Date</th>
<th>Sport</th>
<th>Sample Description</th>
<th>Competitive level</th>
<th>Measure(s)</th>
<th>Statistical test(s)</th>
<th>Finding(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bredemeier and Shields</td>
<td>1986</td>
<td>BB</td>
<td>60 male and female athletes, 40 male and female students</td>
<td>High school, College</td>
<td>Hypothetical moral dilemmas</td>
<td>T-tests, ANOVAs</td>
<td>Suspending aggression judgments can provide athletes more moral justifications to act aggressively</td>
</tr>
<tr>
<td>Bredemeier, Shields, Weiss, and Cooper</td>
<td>1986</td>
<td>VAR</td>
<td>106 male and female students</td>
<td>Elementary and Middle School, Mean age 20</td>
<td>SIQ, 4 hypothetical moral dilemmas, CATS</td>
<td>X^2, ANOVA, Log Linear Analysis</td>
<td>The more experience playing high-contact sports the lower the moral reasoning levels</td>
</tr>
<tr>
<td>Chantal, Robin, Vernat, and Bernache-Assollant</td>
<td>2005</td>
<td>VAR</td>
<td>202 male athletes, 102 male students</td>
<td>Video, questions on perceptions of intent</td>
<td>FA, MANOVA, correlation, MR, SA, X^2</td>
<td>Developing sportspersonship within a mastery climate leads to less malicious and reactive aggression</td>
<td></td>
</tr>
<tr>
<td>Dorsch and Widmeyer</td>
<td>1996</td>
<td>HO</td>
<td>51 male athletes</td>
<td>Ages 15–16</td>
<td>Video, questions on legitimacy and acceptability</td>
<td>MANOVA</td>
<td>Athletics more likely perceive athletic situations as an attempt to physically harm when information is excluded Higher ego orientation endorse higher approval ratings for the use of intentionally injurious behaviors</td>
</tr>
<tr>
<td>Dunn and Dunn</td>
<td>1999</td>
<td>HO</td>
<td>173 male athletes</td>
<td>Youth hockey</td>
<td>BAAGI-S, observed aggression</td>
<td>MANOVA</td>
<td>As level of play increases aggression increases; instrumental aggression more accepted</td>
</tr>
<tr>
<td>Gardner and Janelle</td>
<td>2002</td>
<td>VAR</td>
<td>66 male and female athletes</td>
<td>College</td>
<td>Video, questions on legitimacy and acceptability</td>
<td>MANOVA</td>
<td>Coaches encouraging winning and inter-team competition leads to low moral reasoning</td>
</tr>
<tr>
<td>Guilbert</td>
<td>2008</td>
<td>VAR</td>
<td>300 male athletes</td>
<td>National, Regional, Local</td>
<td>92-item violence in sports questionnaire</td>
<td>PCA, CSO</td>
<td>Forms of violence, frequency, and degree account for differences in violence in sports</td>
</tr>
<tr>
<td>Loughhead and Leith</td>
<td>2001</td>
<td>HO</td>
<td>171 male and female athletes</td>
<td>Ages 10–15</td>
<td>BAAGI-S, observed aggression</td>
<td>T-tests, MANOVA</td>
<td>Athletes view instrumental aggression as natural game behavior; hostile aggression appropriate means to win</td>
</tr>
<tr>
<td>Miller, Roberts, and Ommundsen</td>
<td>2005</td>
<td>SO</td>
<td>705 male and female athletes</td>
<td>Youth soccer</td>
<td>PMCSQ, CIA, hypothetical moral dilemmas, socio-moral questions</td>
<td>MANOVA, correlations, hierarchical regressions</td>
<td>As experience in martial arts increased reports of aggressive actions decreased Traditionally-oriented students reported less aggressive responses than modern-oriented students Preseason legitimacy judgments on aggressive acts predicted aggression during seasonal games; less experienced players had a higher acceptance of aggressive behavior</td>
</tr>
<tr>
<td>Mintah, Huddleston, and Doody</td>
<td>1999</td>
<td>VAR</td>
<td>85 male athletes</td>
<td>College</td>
<td>BAAGI-S, MHAIJ</td>
<td>T-tests, MANCOVA</td>
<td>Coaching a significant predictor of aggression within a variety of sport contexts</td>
</tr>
<tr>
<td>Nosanchuk</td>
<td>1981</td>
<td>MA</td>
<td>42 athletes</td>
<td>Varying belt levels</td>
<td>Hypothetical scenarios, RPPT</td>
<td>Correlations</td>
<td>Athletes more likely perceive athletic situations as an attempt to physically harm when information is excluded Higher ego orientation endorse higher approval ratings for the use of intentionally injurious behaviors</td>
</tr>
<tr>
<td>Nosanchuk and MacNeil</td>
<td>1989</td>
<td>MA</td>
<td>38 athletes</td>
<td>Varying belt levels</td>
<td>Hypothetical scenarios, RPPT</td>
<td>Mean comparisons ANOVAS, MR</td>
<td>As competitive level and age increase the perceived legitimacy of aggressive behaviors increased</td>
</tr>
<tr>
<td>Ryan, Williams, and Winer</td>
<td>1990</td>
<td>BB</td>
<td>49 female athletes</td>
<td>High school</td>
<td>CIA, self-report, aggression legitimacy</td>
<td>ANOVA</td>
<td>If the goals of the team is focusing on effort and teamwork, not winning and athletic ability, then morality is positively influenced</td>
</tr>
<tr>
<td>Shields</td>
<td>1999</td>
<td>VAR</td>
<td>148 athletic directors</td>
<td>High school</td>
<td>Questionnaire</td>
<td>Frequency distributions, PCA, MR</td>
<td>As competitive level and age increase the perceived legitimacy of aggressive behaviors increased</td>
</tr>
<tr>
<td>Stephens and Bredemeier</td>
<td>1996</td>
<td>SO</td>
<td>212 female athletes</td>
<td>Ages 9–14</td>
<td>TEOSQ, JAMBIYSQ</td>
<td>Correlations, PCA, MR, X^2, MANOVA</td>
<td>If the goals of the team is focusing on effort and teamwork, not winning and athletic ability, then morality is positively influenced</td>
</tr>
<tr>
<td>Visek and Watson</td>
<td>2005</td>
<td>HO</td>
<td>85 male athletes</td>
<td>Youth, high school, college, professional</td>
<td>Sport Behavior Inventory, Context Modified Webb scale</td>
<td>ANOVA</td>
<td>If the goals of the team is focusing on effort and teamwork, not winning and athletic ability, then morality is positively influenced</td>
</tr>
<tr>
<td>Wall and Gruber</td>
<td>1986</td>
<td>BB</td>
<td>21 female athletes</td>
<td>College</td>
<td>BAAGI-S, CSAI</td>
<td>T-tests, Correlations</td>
<td>Reactive aggression not influenced by game importance or outcome; changes in instrumental aggression not consistent changes in anxiety</td>
</tr>
<tr>
<td>Worrell and Harris</td>
<td>1986</td>
<td>HO</td>
<td>19 male athletes</td>
<td>Russell's aggression formula, BAAGI</td>
<td>ANOVA, post hoc Tukey</td>
<td>Perceptions and actual aggression are positively related; aggression increases as the season progresses</td>
<td></td>
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</tbody>
</table>

utilized a variety of different methodologies, such as questionnaires, interviews, and videotaped judgments of injurious acts.

Two of the earliest studies that met the inclusion criteria for this review were conducted by Nosanchuk (1981) and Nosanchuk and MacNeil (1989). These investigations focused on the relationship between martial arts training and aggression. In each study, the goal was to assess martial arts students’ aggressive fantasies by presenting them with scenarios involving encounters of threat or frustration and then asking them to decide how they would likely respond. Scores on the authors’ questionnaires were correlated with the students’ level of experience (i.e., belt color) and, in the latter study, by traditional or modern dojos. Results indicated that, as experience in martial arts increased, reports of aggressive actions decreased. Moreover, traditionally-oriented training (i.e., training that stresses philosophical elements such as restraint and control) for students in intermediate and advanced levels resulted in less aggressive responses than modern-oriented training. This suggests that both experience and the coaching or philosophical elements that characterize traditional martial arts training may function as a means of reducing aggressive fantasies or the likelihood that a student would develop an aggressive response to threat or frustration.

Bredemeier and Shields (1986) explored intercollisional morality (i.e., sportspersonship) by examining 100 basketball players and non-athletes from high school and college. During the interview, each student was posed four hypothetical moral dilemmas. Some dilemmas involved daily life contexts, such as returning borrowed money or a married man becoming involved with his secretary, while other dilemmas focused on sport-specific settings, like helping an endangered opponent that has played “dirty” or being told by coach to injure an opposing player. Each dilemma was discussed on their own, their opponents’, and their teammates’ aggressive behavior in response to each situation. Results of this study inspired discussions of “bracketed” morality, which posits that moral reasoning was more self-centered in sport dilemmas. More specifically, the authors suggested
that individuals involved in sports temporarily suspend their typical moral obligations to consider the needs of others because sports can provide them with a socially acceptable opportunity to employ selfish attitudes or cognitions.

Some of the same researchers who coined the term “bracketed” morality also attempted to establish a relationship between sports involvement and moral functioning (Bredemeier, Weiss, Shields, & Cooper, 1986) by examining 106 children in grades four through seven. Sports involvement and aggression data were collected via a self-report battery, which consisted of The Sport Involvement Questionnaire (SIQ; Lewko & Ewing, 1980), a moral interview (consisting of four hypothetical moral dilemmas which were life-related as well as sport-related), and the Children’s Action Tendency Scale (Deluty, 1984). Results indicated a small negative correlation between moral reasoning levels and participation in high-contact sports in males and medium-contact sports in females, implying that the more experience boys and girls had playing high-contact sports, the lower their moral reasoning levels. Thus, boys and girls who affiliated with high or medium-contact sports sought moral balances that were advantageous to the self and also described themselves as being more aggressive than others in regards to both sport-related events as well as in life-related experiences. Furthermore, boys and girls who preferred to watch high-contact sports were also found to be more physically aggressive in both sport and everyday contexts. Conversely, girls who practiced low-contact sports described themselves as being less physically aggressive in everyday life situations.

5.1.2. Task (mastery) versus ego (performance) orientations

Studies within this subsection focus on how athletes perceive aggression when their orientations are manipulated into a cooperative environment, a learning (i.e., mastery) environment, or a competitive (i.e., performance) environment where winning is heavily emphasized. For example, Miller, Roberts, and Ommundsen (2005) investigated 705 male and female youth soccer players. In this particular study, moral functioning was assessed by reading four moral dilemmas during a soccer match and providing responses measuring the appropriateness of the described behavior, the reason for consciously resolving the dilemma, whether they would use the described behavior in a real life situation, and how often they committed the described behavior in the past. Researchers also measured perceived legitimacy of intentionally injurious acts with two scenarios, one involving knocking the wind out of an opponent to take that player out of the game for a short time, and the other scenario intimidating an opponent by shoving him/her. Results were examined within mastery climate (i.e., the coach emphasizes learning from past mistakes, cooperation, and both personal as well as group development) and performance climate (i.e., the coach emphasizes the importance of winning, encourages rivalries among teammates, and treats players differently based on athletic ability) concepts. Results revealed that scores associated with a high performance climate predicted lower moral judgment and more perceived legitimacy of using physical intimidation. Also, mastery climate predicted greater mature moral reasoning than performance climates. These findings suggest that emphasizing winning and inter-team competition for success predicts unseasonal attitudes, cheating behaviors, and aggressive actions.

A pair of studies within this group utilized the Task and Ego Orientation in Sport Questionnaire (TEOSQ; Duda, Olson, & Templin, 1991), which examines perceptions of the determinants of success in sports. Similar to a performance orientation, an ego orientation emphasizes a belief that sport success requires high ability, whereas task orientation mirrors a mastery orientation in that it espouses a belief that sport success requires interest, effort, and teamwork. Stephens and Bredemeier (1996) studied aggression in terms of both moral and motivational constructs, measuring 212 female youth soccer league players. Results indicated that the combination of perception of the team’s pro-aggressive norms, the coach’s goal orientation, and the athletes’ moral motives explained 33% of the variance in likelihood to aggress against an opponent. More specifically, players who were more likely to endorse pro-aggressive team goals, perceive their coach as possessing ego-oriented goals, and choose a pre-conventionally oriented situation as most tempting to display aggression were more likely to display aggressive behavior. Dunn and Dunn (1999) also examined the relationship between goal orientations, perceptions of athletic aggression, and sportspersonship on 173 male youth ice hockey players. Their results suggested that players with higher levels of ego orientation (i.e., focusing on winning and athletic ability) were more likely to endorse high approval ratings for the use of intentionally injurious behaviors than were players with lower levels of ego orientation. This finding, coincidentally, supports Duda et al. (1991) original research on high school basketball players.

5.1.3. Contextual studies

In contrast to athletes providing responses to aggressive perception questionnaires or hypothetical scenarios, some studies have been conducted using ratings of athletes’ aggression by non-athlete participants. For example, Shields (1999) examined verbal intimidation (VI), physical intimidation (PI), and physical violence (PV) in high school athletics both by program and by sport, examining 148 high school athletic directors overall perceptions of the level of severity within each sport as well as the antecedent items (e.g., intimidation and violence occur more frequently in games between traditional rivals). Results indicated that coaching was a significant predictor for VI, PI, and PV. Moreover, the contextual setting was a significant predictor for PV. Coaching again emerged as a significant predictor of aggression within a soccer, basketball, and football context.

5.1.4. Perceptual self-report studies summary

Results of self-report studies begin to reveal some general patterns about the perception of aggression and violence in sports. First, it appears that suspending judgments of aggression within a sport context can provide athletes more moral justifications to act in an aggressive manner. This trend seems to be further amplified by the specific sport environment and the contact level associated with the sport in question. Findings also illustrate that perceptions are congruent with actual aggression, meaning that athletes who think they are aggressive tend to report being more aggressive when measured. As was the case in on and off-field self-report studies, it appears that coaches play a vital role in this area of aggression. More specifically, coaches appear to influence the moral development of the athletes they train, with an emphasis on winning and inter-team competition facilitating low moral reasoning and a greater perception that cheating and the use of aggression to win justifiably outweighs the need to play fairly. If a coach instructs the team to focus on effort and team unity rather than merely on winning and athletic ability, then moral development appears to be positive influenced. Thus, perceptual self-report studies support the notion that a coach’s ability to influence the sporting climate plays an important role in the likelihood of an athlete to aggress against an opponent.

5.2. Perceptions of on-field aggression

5.2.1. Observational studies

Sportspersonship has also been measured by having athletes observe videotapes of aggressive behaviors and provide legitimacy judgments of the player’s actions. Dorch and Widmeyer (1996) examined the impact of varying amounts of contextual information on observers’ perceptions of actors’ intentions to harm others physically and psychologically. In a study of high school ice hockey players, 51 athletes were randomly assigned to view one of three videotaped presentations showing eight ice hockey behaviors in either a) a
dynamic mode with contextual information, b) a dynamic mode with no context, or c) a static, “freeze-frame” mode. Results were consistent with authors’ hypotheses, demonstrating that contextual material tends to lower perceptions of athletes intent to physically harm others when non-aggressive stimuli are presented. In both videotape situations, removal of contextual information tends to increase the perception of malicious intent of the aggressive stimuli.

Gardner and Janelle (2002) studied male and female high-contact athletes (i.e., football, basketball, soccer; n = 24), low-contact athletes (i.e., baseball, softball, volleyball; n = 18), and non-athletes (n = 24) evaluations of 28 clips of aggressive or assertive behaviors in an athletic or non-athletic setting. After viewing each clip, participants provided legitimacy ratings ("yes/no" answers) to the likelihood that the person sustained an injury and whether they would commit this behavior as well as an acceptability rating (7-point scale) on the behavior displayed in the clip. Results revealed that males rated videotaped behaviors across both settings as more legitimate and more acceptable than females. Additionally, both aggressive and assertive behaviors were rated more legitimate and acceptable in athletic situations than non-athletic situations, with no differences between athletic contact levels.

In a similar study, Visek and Watson (2005) assessed 87 male hockey players, including youth (n = 18), high school (n = 23), collegiate (n = 31), and professional (n = 15) level athletes. Players watched five ice hockey video clips that depicted rule-breaking and aggressive behavior and then provided ratings of perceived legitimacy for the aggressive behaviors as well as perceived professionalism of the players’ attitudes via two questionnaires. Results illustrated that as competitive level increased across groups, the perceived legitimacy of aggressive behaviors increased. More specifically, players rated the legitimacy of aggressive behaviors progressively higher as the competition level increased, but the mean responses across scenarios failed to reach the legitimacy threshold provided by the authors, suggesting that no participant group found aggressive sport behaviors acceptable across all situations. Finally, across all groups, the lowest mean score for the legitimacy of aggressive actions was within the seriously injured scenario. Despite the attenuated legitimacy ratings for the extreme example, the study’s main finding, i.e., that the longer a male hockey player continues in the sport the more likely he will accept sport-related aggression, stands in stark contrast to the Nosanchuk (1981), Worrell and Harris (1986), and Ryan, Williams, and Wimer (1990) studies described earlier in this review.

Chantal, Robin, Vernat, and Bernache-Assollant (2005) were examined sportspersonship, sport motivation, and athletic aggression in sports using 102 male physical education students involved in judo or rugby and 202 male athletes involved in rugby, soccer, and handball. Authors confirmed their hypothesis that the more participants firmly held sportspersonship orientations, the less likely one would aggress against an opponent with malicious intentions. Furthermore, results provided support that sportspersonship orientations were a mediating factor between sport motivation and aggression, illustrating that firm sportspersonship orientations resulted in decreased reactive aggression and increased instrumental aggression. This finding suggests that developing sportspersonship within a mastery climate leads to less malicious intent or reactive aggression. While athletes from mastery climates can still be aggressive, use of more acceptable forms of aggression, such as attempting to gain an advantage within the rules of the game rather than deliberately injuring other players, appears to be the norm.

5.2.2. Hostile (reactive) versus instrumental (proactive) aggression

Whereas the previous subsection focused on the environmental climate of the athlete, this grouping of studies focuses on the primary form of aggression (i.e., hostile versus instrumental) perceived by participants. First, Wall and Gruber (1986) analyzed the usefulness of a 28-item short form of the original Bredemeier Athletic Aggression Inventory (BAAGI; Bredemeier, 1975) through a comparison of competitive state anxiety. Twenty-one female intercollegiate basketball players were studied before and after games, with results indicated that players were significantly more aroused before crucial games than before easy games. The study further showed a significant increase in instrumental aggression before easy games versus crucial games. This suggests that players perceived themselves to be less aggressive before crucial games, although no such relationship was observed for reactive aggression.

Mintah, Huddleston, and Doody (1999) studied 85 Division I-AA male athletes from football, basketball, wrestling, and soccer teams, with dependent measures being the BAAGI-S and the Mintah Huddleston Aggression Justification Inventory (MHAJI). Regardless of sport type, results showed that athletes disagreed with justifications for aggressive actions more than the actions themselves, although this difference was non-significant. When controlling for age, semi-contact sport participants scored slightly (but not significantly) higher than the contact sport participants on both the BAAGI-S hostile subscale and the MHAJI hostile and instrumental subscales. On the BAAGI-S instrumental subscale, semi-contact athletes scored significantly lower than did the participants in contact sports, suggesting that contact sport athletes view instrumental aggression as more appropriate means to the desired outcome of winning.

Other researchers examined the entire BAAGI instrument (rather than the short form) when evaluating actual aggressive behavior. Worrell and Harris (1986) compared BAAGI instrumental aggression scores of 19 male hockey players to their observed aggressive behavior by averaging the total number of penalty points per game in a season. Results illustrated a significant positive correlation between perceived aggression and observed aggression, regardless of location or performance, with observed aggression significantly increasing over the course of the season. Players, however, perceived themselves to be less aggressive than their observed aggressive behavior scores. Another interesting finding is that teams were more aggressive at home games and when they were winning. These findings are similar to Ryan et al. (1990) study on 49 female basketball players, which discovered that preseason legitimacy judgments on aggressive acts predicted actual aggression during seasonal games and that first-year players exhibited a much higher acceptance of aggressive behavior during the preseason than more experienced players. Loughead and Leith (2001) found similar findings in their research on 171 athletes ranging from 10 to 15 years old. Specifically, these researchers found that as level of play increased, perceived and observed aggression also increased. Results also found that perceptions of instrumental aggression were viewed as more acceptable than hostile aggression, although there were almost twice as many hostile penalties received as instrumental.

5.2.3. Perceptions of on-field aggression studies summary

The work on perceived aggression in on-field situations provides unique insight into how athletes and non-athletes examine on-field aggressive behavior. It takes a different approach than on-field observed aggression studies because it evaluates how people perceive an individual’s behavior, how they justify the actions they observe, and whether they might commit such acts of aggression. Studies herein demonstrate that when contextual information about aggressive behaviors are excluded, athletes are more likely perceive other people’s actions as an attempt to physically harm rather than gain a competitive advantage. In other words, providing athletes contextual information when instrumental aggression occurs or when hostile aggression is suspected may serve to reduce the likelihood of an athlete perceiving a behavior as unsportsmanlike or involving malicious intent.
Gender and athletic experience also appear to play a role in both the perception of aggressive acts as well as the actual engagement in aggressive behaviors. In regards to the perceived legitimacy of aggressive behaviors, athletes universally failed to condone aggressive acts that resulted in serious injury. However, male athletes perceive aggression as more legitimate compared to females and non-athletes, regardless of sport contact level, and younger athletes were more likely to see aggression as an acceptable response. Interestingly, as competitive level increased, the perceived legitimacy of aggressive behaviors generally increased as well. Experienced athletes tended to view themselves as less aggressive and in better control of their aggressive tendencies off-field. However, they also felt more able to morally justify their use of aggressive actions in athletic situations. This does not necessarily mean that veteran players were more likely to be aggressive or believe aggressive behaviors were acceptable across all situations, but it suggests that players by and large were more likely to accept sport-related aggression as they continue in their sport.

As seen in other perceptual studies, the development of sports-personship or increased moral reasoning within a mastery climate appears to attenuate the acceptance of malicious acts or reactive aggression. Athletes who were taught the importance of teamwork, cooperation, effort, and learning from their mistakes had higher levels or moral reasoning while athletes that focused on within-team competition or exposed a belief that “winning is everything” had more limited moral reasoning skills and subsequently greater tendencies to aggress against an opponent. Thus, the environments where athletes train seem to have an important influence on how they perceive aggressive situations, suggesting that coaches, team leaders, and team personnel are prominent figures in the realm of perceived athletic aggression.

6. Conclusions and future directions

Given the number of published articles and the multitude of disciplines that have addressed the subject, it seems counter-intuitive to suggest that there is a paucity of research on aggression or violent behavior in sports. However, as this review demonstrates, only a small proportion of the available works on “athlete” aggression examine it from an empirical perspective. Despite its popularity, it appears that little information about the aggressive nature of athletes has been sufficiently documented through scientific methods, allowing assumptions about the violent tendencies and practices of athletes to persist over the past 30 years. And because researchers have not utilized systematic investigation or upheld the scientific rigor necessary to advance the field, a number of “core” questions regarding athletic aggression remain unanswered. Until the methodological approach to this area of aggression research improves, answering questions such as whether athletes are, indeed, an inherently more violent population will remain a difficult endeavor.

From an empirical perspective, the reliance on correlational data, the lack of control or comparison groups, and the failure to statistically account for confounding variables when conducting analyses are persistent limitations in empirical investigations into athlete aggression. In addition to the methodological and statistical challenges that face most researchers, investigators of athletic aggression also struggle to definitely identify what constitutes an aggressive act in sports because of the unique nature of the athletic environment and the sanctioned use of physical means to influence outcomes in some situations. Thus, defining aggression continues to be among the primary methodological problems associated with investigating violence in sports. This creates the unfortunate situation where an observed behavior could be correctly viewed as either violent or non-violent, depending on whether the focus of the study was on a particular sport or whether it was being conducted for on-field or off-field purposes. Not only do these factors create problems when designing a research study, but they also make the generalization of the findings more difficult and the comparison of results extremely more difficult. Similarly, the current use of standardized measures in sports to assess potential aggressive acts is limited. Based on this review, research on athlete violence and aggression has inspired the use of two, standardized measures to evaluate aggressive behavior: the Aggression Questionnaire (Buss & Perry, 1992); and the Bredemeier Athletic Aggression Inventory–Short Form (BAAGI-S; Wall & Gruber, 1986). However, investigation into these measures is not exhaustive and considerable research could be done on identifying the psychometric properties of these research tools before moving forward with their use in studies of athlete aggression. Ideally, researchers, clinicians, and athletes would benefit most from the development of a reliable, standardized battery of aggressive behavior for use among athletes.

The research herein demonstrates that the impact of violent perceptions and judgments on athletes can be monumental. Overall, there appears to be a connection between perceptions of violence, morality development, and the actual occurrence of aggressive acts during on-field play, but there remain questions as to the strength of this association and how these perceptions of “bracketed” morality might lead to the incidence of off-field aggressive behaviors. Objective judgments (e.g., suspending or fining players) and the natural consequences (i.e., injury) that follow violent behavior can serve to label an athlete as aggressive or passive, altering whether athletes are perceived as more hostile or sportspersonlike when competing. Research has shown that these judgments of aggression can also alter game strategy, bias referees, and even inspire other players to perform well. Moreover, the research on athlete aggression has also highlighted the impact that coaches can have, noting that coaches have been shown to be involved in the development of morals; instrumental in determining what is deemed “acceptable” aggression; and influential in the actual occurrence of aggressive behavior during sporting events.

In addition to the points raised throughout the review, it is interesting to note that the majority of the research on aggression and violence in sports has focused on the negative aspects of these behaviors despite a number of findings that suggest it may have a positive influence on performance. Perhaps highlighting the unique atmosphere of sports, a number of studies investigating athlete aggression have reported on the “positive” aspects of what most would consider violent behavior. However, there has been insufficient follow-up on these findings and a more advanced understanding of the differences between hostile and instrumental aggression is lacking. As the investigation of aggression and violent behavior in sports continues, one would hope that researchers and clinicians would strive to develop a greater understanding of this type of aggression, focusing on how controlled and instrumental aggression may serve as keys to successful athletic performance.

In summary, the vast majority of research on aggression and violence in sports has failed to investigate the subject from a scientific perspective. Subsequently, our theoretical and practical understanding of this complex topic is not as robust as one would expect, given the popularity of the subject matter. Not only do these limitations prevent an informed discussion of the subject, but they have also inhibited the development of future lines of research. It is hoped that evaluating the research on athlete aggression in terms of its empirical strengths would allow future researchers to be better prepared in developing more effective research studies. That way, investigators can address the methodological problems that have historically plagued this area of exploration while attempting to answer the global and specific scientific questions that continue to surround the expression of violence and aggression in sports.

Acknowledgment

The authors would like to thank Susie Quintana Marikle for her assistance in reviewing the article.


