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Self-reported Hostile Aggression in Contact Athletes, No Contact Athletes and Non-athletes

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ABSTRACT

To investigate the relationship between athletic participation and off-field hostile aggression, Buss and Perry's (1992) Aggression Questionnaire (AQ) was completed by two groups of 86 university athletes in either contact or no contact sports and two control groups of 86 non-athletes who were matched to the athletes in physical size. In general, bigger participants scored higher on hostile aggression and reported more fighting than smaller participants, but athletes and non-athletes did not differ. These results contradict the learning and catharsis theories of aggression in sport, and undermine the media image of the belligerent off-field athlete.

Introduction

Theoretical Considerations

Vigorous athletic activity can be classified as assertive behavior, instrumental aggression, or hostile aggression1 (Tenenbaum, Stewart, Singer, & Duda, 1997; Wann, 1997). In assertive behavior, the player employs legitimate force within game rules. In instrumental aggression, the player tries to inflict physical damage as a step towards the higher goal of winning. In hostile aggression, the player is angry and primarily bent on physically harming an opponent. Although such behaviors have been linked to team success (Caron, Halteman, & Stacy, 1997; Huang, Cherek, & Lane, 1999), hostile aggression is particularly controversial. It is not clear if it improves performance by increasing arousal to an optimal level or causes it to deteriorate by distracting the player from the task at hand (Cox, 2002).

Because hostile aggression involves physical harm (Buss & Perry, 1992), it is likely to be

more frequent in contact than in no contact sports. Contact sports may attract people who are already aggressive or engaging in contact sports may promote aggression (the selection and developmental hypotheses respectively, Cox, 2002). Furthermore, and of particular concern, hostile aggression may occur not only on but also off the field, where it has consequences for everyday life. Indeed, according to social learning theory (Bandura, 1973), aggressive behavior can occur via modeling the behavior of others or even oneself. In the latter case, it has a circular effect, one act of aggression leading to another. Applying this reasoning to sport, contact sport athletes may be more aggressive off the field than no contact sports athletes because their actions on the field have a cumulative effect. Furthermore, aggression is often rewarded in contact sport, increasing its frequency on the field and making it more likely in other situations (Zillman, Johnson, & Day, 1974). As Bandura (1973, p. 59) puts it: "A culture can produce highly aggressive people...by valuing aggressive accomplishment, furnishing successful models, and ensuring that aggressive actions secure rewarding effects." A similar view has been expressed by the Seville Statement on Violence (1986), which argues that aggression is not genetically programmed but is largely a function of cultural factors. This statement refers to aggression in general, and therefore outside sport, but similar sentiments have been expressed about aggression inside sport [Tenenbaum et al.'s (1997) ISSP Position Statement on Aggression and Violence]. Contact sports such as football and rugby are thought to be particularly likely to provoke aggression off the field (Arnold, 2001).

The idea that aggression breeds aggression is also part of cognitive neoassociation theory, according to which venting of aggression activates aggressive thoughts and primes angry feelings, thereby increasing the possibility of further aggressive behavior (Bushman, 2002). This theory is related to the classic frustration-aggression hypothesis as modified by Berkowitz (Wann, 1997). Inability to attain a goal leads to frustration with triggers an aggressive drive, and the likelihood of aggressive behavior is enhanced by cues in the environment. Contact sports are particularly likely to provoke aggression because they provide many aggressive cues.

Although athletes in contact sports may display more off-field hostile aggression than no contact athletes and non-athletes, there is also a popular belief that vigorous sporting activity is healthy because it allows participants to "let off steam" in acceptable ways, thereby decreasing aggressiveness in everyday life. In other words, sports participation serves a protective function. (Bushman, Baumeister, & Stack, 1999). This is catharsis theory, according to which aggression is a basic instinctive drive that builds up and must be released directly in behavior (Bushman, et al., 1999, Cox, 2002). Catharsis theory actually comes in two forms (Zillman, et al., 1974). In the motor-discharge model, any vigorous activity releases pent-up aggression. In displacement theory, the activity must consist of hostile or perhaps instrumental aggression. Officials in the National Hockey League seem to endorse this notion (Jones, Stewart, & Sunderman, 1996), holding that violence on the ice is acceptable because it permits the cathartic release of frustrations brought on by the game itself. Similarly, some educators have supported interscholastic football as a healthy outlet for natural childhood aggression (Bennett, 1991; Martin, 1976).

In summary, off-field hostile aggression might be higher in contact than in no contact athletes or in non-athletes due to selection or development (learning). However, if displacement catharsis theory is correct, aggression might be lower in contact athletes than in the other two groups.

Alternatively, if the motor-discharge model is correct, aggression might be lower in both groups of athletes compared to non-athletes.

Evidence for Off-field Aggression

Media reports. Examples of off-field hostile aggression are not difficult to find. Boxer Mike Tyson was indicted for ear-biting inside the ring, but was also convicted of rape outside the ring (Oates, 1992; Springer, 1998). Hockey and football players have been in court for sexual assault, for fighting, and for destruction of property ("Nedved Charged with Sexual Assault," 1996; "Three College Football Players Charged with Rape," 1998; "3 North Carolina Players Convicted in Brawl," 1998), often with alcohol involvement (e.g., "Illinois State Players Charged in Frat Fight," 1998). Indeed, a survey of 200 college police departments showed that assaults by athletes were reported on the average every 18 days (Caron et al., 1997). Such reports create the image of athletes as belligerent drunks.

Such cases and statistics reflecting off-field aggression seem compelling, but they may distort the true picture. On the one hand, the media may give greater coverage to criminal acts by people who are well known than by those who are unknown. In other cases, they may play down the misbehavior of celebrities, in order to protect them (Arnold, 2001; Caron, et al., 1997). Rarely do they report comparative statistics for crime rates in athletes and non-athletes. In fact, for male university students who participated differentially in college sports, there was no significant relationship between sport involvement and either rape-supportive attitudes or aggressive sexual experiences (Caron et al., 1997). Although sexual aggression was predicted by competitiveness, it was not connected directly to athletic participation per se.

Laboratory experiments. Contradicting popular opinion, experimental research has not supported catharsis theory. For example, Zillmann, Katcher, and Milarsky (1972) exposed participants to a high or low level of aggressive instigation, then placed them in either a high or low state of arousal via physical exercise (threading discs or vigorously riding a stationary bicycle). Subsequently, they were allowed to shock their instigator. Contrary to the motor discharge theory of catharsis, strenuous physical activity did not reduce aggressive shocking. Recently, Bushman (in press) invited angered participants to punch a bag while they thought about the instigator (rumination condition) or about becoming fit (distraction condition). Compared to a control group who did not punch at all, ruminators felt more angry and delivered more aversive noise to their instigator. This contradicts displacement catharsis theory and supports cognitive neoassociation theory. Furthermore, distracted participants who punched and thought about fitness did not deliver different noise intensities compared to control or ruminating participants, contradicting motor discharge catharsis theory.

These experiments tested catharsis theory by manipulating exercise directly. However, Zillmann et al. (1974) compared groups of contact sport varsity athletes, no contact sport varsity athletes, and non-athletes. Under the no-provocation condition, delivery of obnoxious noise did not differ among the three groups, contradicting motor-discharge catharsis theory, which predicts lower aggression in athletes. Under provocation, aggression again did not differ between contact athletes and the other two groups, contradicting both the displacement catharsis theory and learning theory, which respectively predict less and more aggression in contact athletes than in

non-athletes. However, under provocation, aggression was lower in no contact athletes than in non-athletes. Zillman et al. argue that participation in no contact sports serves a protective function by preparing people to cope with provocation.

However, Huang, et al. (1999) conducted another laboratory study in which they found more aggression after provocation in high contact than in low contact high school athletes. They also administered self-report questionnaires measuring verbal and physical aggression in everyday life. Physical aggression scores were slightly higher for the high than for the low contact athletes but, as the authors note, the small sample sizes (n = 8) meant that the study had low power. Although they conclude that the results are consistent with a learning theory of aggression, they are also consistent with a cathartic effect of low contact sport. In the absence of a non-athlete control group [which Zillman et al.(1974) had], it is difficult to distinguish these two possibilities.

In summary, the studies with experimentally-manipulated exercise contradict the motor discharge and displacement catharsis theories, but support the cognitive neoassociation/learning theories. The studies with athletic participation as a subject variable are less clear, with evidence against all three theories (Zillman et al., 1974), but also evidence in favour of learning theory (Huang et al., 1999) and of coping theory (possibly Huang et al., 1999; Zillman et al, 1974).

Self-reported hostile aggression. Laboratory studies have the advantage of control over the experimental task, but they do not bear directly on the relationship between athletic activity and off-field aggression in everyday life. One way of obtaining this information is to administer an inventory containing questions that cover angry feelings and behaviour in a variety of situations. Huang et al. found some suggestive evidence with this method, but their study lacked power.

In other studies, it has been found that college athletes in general are more aggressive and more dominant than non-athletes (males, Fletcher & Dowell, 1971; males and females, Valliant, Simpson-Housley, & McKelvie, 1981), and that both male college baseball and tennis players scored higher than the college norms for aggressiveness. A group of male and female college athletes also reported more criminal behavior (including hitting a significant other) than non-athletes (Young, 1990). These findings indicate that participation in any sporting activity is associated with trait aggression.

On the other hand, it has been suggested that football players, who are contact sport athletes, are more aggressive than no contact athletes such as golfers or tennis players (Cox, 2002; Singer, 1975). Indeed, one study found that hostile aggression scores increased over the season for university football players, but not for physical education students (Patterson, 1974). Elsewhere, football players were more dominant than nonathletes, but not different from baseball players or track athletes (Aamodt, Alexander, & Kimbrough, 1982). University football players have also been found to be higher than other athletes in narcissism (Elman & McKelvie, 2002), which involves anger and aggressive behavior (Ruiz, Smith, & Rhodewalt, 2001). However, male varsity football players have scored in the average range on an aggression test (Lowe & Sani, 1972), and male varsity boxers have scored lower than wrestlers and cross-country runners (Husman, 1955). In addition, within a football team, it has been reported that active football players were less aggressive than redshirted (inactive) players (Nation & LeUnes, 1983). These findings do not show a consistent relationship between contact sport (football) and hostile

aggression.

The Present Study

The purpose of the present study was to examine hostile off-field aggression in athletes and non-athletes. The theoretical goal was to test predictions from learning theory and catharis theory. The practical goal was to evaluate the media image of the violent athlete, particularly from contact sports.

Although no clear picture emerges from the self-report descriptive studies, we adopted the inventory method, but we also incorporated elements of control that are sometimes found in experimental studies. Hostile aggression was measured for varsity athletes in a variety of contact and in no contact sports. However, a unique feature of the present research was that each group of athletes was compared to a corresponding control group of non-athletes which was matched to the athletes on a number of variables. Special care was taken to match on physical size (height, body weight), which may be related to aggressiveness. For example, if contact athletes reported more hostile aggression than no contact athletes or than a general group of non-athletes, it might reflect the fact that they were bigger.

On the basis of the three major theories of the relationship between athletic participation and aggression, our expectations were as follows. If learning theory was correct, aggression would be greater for contact than for no contact athletes, and also greater for contact athletes than for their non-athlete counterparts. If the motor-discharge model of catharsis was correct, aggression would be similar for contact and no contact athletes, but lower than for non-athletes. If the displacement catharsis theory was correct, aggression would be lower for contact than for no contact athletes, and also lower for contact athletes than for their non-athlete counterparts.

Following previous studies (Huang et al., 1999; Zillman et al., 1974), football was classified as a contact sport, and both track and baseball were classified as no contact sports. Rugby was added as a second contact sport, and golf and volleyball were added as no contact sports. However, basketball has been classified as both a contact sport (Huang et al., 1999) and a no contact sport (Zillmann et al, 1974). Although the degree of contact in basketball is somewhat less than in football or rugby because players cannot deliberately hit to bring each other down, physical clashes are frequent, and athletes must be strong enough to deal with it. Similarly, in soccer, direct kicking of an opponent is prohibited, but there is frequent and vigorous contact when players tackle for the ball. Consequently, we added basketball and soccer to the contact group.

To measure hostile aggression, Bush and Perry's (1992) Aggression Questionnaire (AQ) was employed. It is an updated version of their widely-used hostility inventory, and has been employed by other researchers examining trait aggression (e.g., Wann, Shelton, Smith, & Walker, 2002). Because there has been criticism of bias in self-reports of aggression (Kirker, Tenenbaum, & Mattson, 2000), we added a second control feature, which was a measure of socially-desirable responding. Although the earlier hostility inventory was not related to social desirability (Govia & Velicer, 1985), the present version has been, at least with women (Harris, 1997). The Eysenck Personality Inventory (EPI; Eysenck & Eysenck, 1968) was also administered to help conceal the

main purpose of the study.

Method

Participants

Male undergraduates were recruited from two local universities, one English-speaking and one French-speaking. A total of 96 athletes and 98 non-athletes completed the questionnaires. Athletes represented their university in one of eight sports: football, rugby, basketball, soccer, baseball, volleyball, track, and golf. The non-athletes did not participate in sport at the varsity level but could have played intramural sports, engaged in recreational activity, or may not have exercised at all. For each athlete, a corresponding non-athlete was matched in university attended, age, year of study, height and weight. For the last two variables, matching was acceptable if height was within 2 inches and weight was within 10 pounds.

This procedure resulted in a final sample of 86 athletes and 86 non-athletes. For athletes, the number in each sport was: 15 football, 16 rugby, 10 basketball and 5 soccer (46 contact); 7 baseball, 9 volleyball, 12 track and 12 golf (40 no contact). For each sport, there was an identical number of matched non-athletes. Thus, the design of the study had two variables (physical size, athletic participation), each with two levels: bigger, smaller (physical size) and athlete, non-athlete (athletic participation). The contact and no contact athletes fell into the cells for the bigger athletes and smaller athletes respectively.

Materials

Buss and Perry's (1992) Aggression Questionnaire (AQ), which is a revised version of their earlier Hostility inventory (Buss & Durkee, 1957), was used. It consists of 29 items, distributed unequally among physical aggression, verbal aggression, anger and hostility. It measures hostile aggression, because it contains items for aggressive behavior and for angry/hostile feelings. For the total score, internal consistency (alpha) was .89 and 9-week test-retest reliability was .80 (Buss & Perry, 1992; Harris, 1997). Validity is supported by acceptable correlations with other self-report measures of aggression and with peer nominations of aggressive behavior (Buss & Perry, 1992; Harris, 1997).

Social Desirability was measured by the Balanced Inventory of Desirable Responding (BIDR; taken from Robinson, Shaver, & Wrightsman, 1991), which consists of 40 statements. The total score reflects both self-deception, the tendency to overrate oneself, and impression management, the tendency to create a positive social image. Robinson et al. report that alpha is .83, test-retest reliability is .65 or better, and that criterion validity coefficients with other self-report measures of social desirability are .71 or better.

Items for the AQ and BIDR were combined into a single questionnaire of 69 true-false items entitled "Personality Inventory." BIDR items were kept in their original order and randomly mixed with AQ items, which were themselves randomly mixed among the 4 subscales as recommended by Buss and Perry (1992). Because Huang et al. (1999) found a difference between high and low contact athletes on a direct question about physically-aggressive behavior, a final

yes/no question was added at the end of the Personality Inventory: "Since coming to university, have you ever been an active participant in a fight?" If the answer was in the affirmative, the participant was asked how many times they had fought, and how many times alcohol was involved.

The Eysenck Personality Inventory (EPI; Eysenck & Eysenck, 1968) consists of 24 extraversion items, 24 neuroticism items and 9 lie items, all answered with either yes or no. Because these scores were not analyzed, no further psychometric information is given here.

All questionnaire items were translated into French by the first author, then proof-read and corrected by another bilingual individual. The English versions were given at the English-speaking university and the French versions were given at the French-speaking university.

Procedure

Athletic participants were tested individually or in groups, in some cases via campus mail. Non-athletic participants were tested individually in the same manner. Participants filled out a consent form, provided demographic information (age, weight, height, year of study), then completed the Personality Inventory and EPI in counterbalanced order. No names were attached to questionnaires and confidentiality was assured.

Results

Preliminary Analyses

For all 172 participants combined, the AQ scores were correlated with other scores as follows: -.080 (age), .186, $p = .015$, (weight), .003 (height), -.023 (year of study), -.506, $p < .001$, (L), and -.457, $p < .001$ (BIDR). Aggression scores were positively related to weight, and negatively related to social desirability (BIDR). There were also two significant positive relationships between self-reported number of fights and the other variables: .206, $p = .007$ (weight) and .189, $p = .013$ (year of study).

To check the matching of athletes and non-athletes in the two physical size conditions, 2 X 2 (Physical Size X Athletic Participation) factorial ANOVAs were conducted on age, year of study, height and weight. For age and for year, neither main effect or their interaction was significant. For both height, $F(2, 166) = 7.03$, $p = .009$, and weight, $F(2, 166) = 20.85$, $p < .001$ (see Table 1), the main effect of physical size was significant. Contact athletes and their non-athlete counterparts were both taller and heavier than those no contact athletes and their non-athlete counterparts. The lack of significant effects of athletic participation, and of the physical size X athletic participation interactions, shows that the contact (bigger) and no contact (smaller) athlete groups were successfully matched to their non-athletic control groups on all variables.

Table 1. Mean Scores on the Aggression Questionnaire

Size	Athletes				Non-athletes				Total			
	n	*M*	*SD*	M_c	*n*	*M*	*SD*	M_c	*N*	*M*	*SD*	M_c
Bigger	46	12.35	5.57	12.46	46	13.20	5.12	12.69	92	12.77	5.34	12.58
Smaller	40	10.20	5.02	10.90	40	11.80	4.42	11.55	80	11.00	4.77	11.23

Note. Maximum score = 29, M_c = adjusted means from covaration analysis.

Major Analyses

For aggression scores (see Table 1), a 2 X 2 (Physical Size X Athletic Participation) factorial ANOVA gave only a significant effect for physical size, F (2, 168) = 5.23, p =.024. Bigger participants (athletes and non-athletes combined) scored higher than smaller participants (athletes and non-athletes combined). The standardized effect size d (Cohen, 1977) was 0.45. The effect of athletic participation (p = .116) and of the physical size X athletic participation interaction (p = .628) were not significant.

Because AQ scores (hostile aggression) were significantly correlated with BIDR scores (social desirability), a 2 X 2 (Physical Size X Athletic Participation) ANCOVA was run with BIDR scores as a covariate. The results were the same as above, with the exception that the effect of physical size was now marginally significant, F(1, 167) = 3.71, p = .056.

Finally, because a learning (developmental) account of greater hostile aggression in contact compared to no contact athletes implies that scores would increase over time for the contact athletes whereas a selection account implies that they would not, a 2 X 2 X 4 (Physical Size X Athletic Participation X Year of Study) ANOVA was conducted on the AQ scores. Again, the only significant effect was physical size, F(1, 156) = 4.20, p = .042. The effect of year of study (p = .190) and its interaction with other variables did not approach significance (ps = .740, .698, .948).

The data for the reported number of fights were also analyzed. A 2 X 2 (Physical Size X Athletic Participation) factorial ANOVA gave a significant effect of physical size, F(1, 168) = 10.34, p = .002. The mean number of fights was greater for bigger than for smaller participants (d = 2.08). The effect of athletic participation (p = .254) and of the interaction between the two variables (p = .409) did not approach significance. These data were also analyzed with year of study as a factor, but it did not alter the results. The only significant effect was physical size, F(1, 156) = 7.92, p = .006. The effect of year of study (p = .498) and its interaction with other variables did not approach significance (ps = .525, .758, .966).

Although the number of people reporting that they had fought was highly variable across conditions, and very small in some cases (see Table 2), an ANOVA was run on the proportion of cases in which alcohol was stated to be a factor in fighting behavior. There was a significant main

effect of physical size, F(1, 41) = 5.65, p = 002, and of athletic participation, F(1,41) = 4.23, p = .046. Alcohol was reported to be involved more often by bigger than by smaller participants (.70, .40). Athletes reported less alcohol involvement than non-athletes (.52, .80).

Table 2. Mean Number of Reported Fights and Proportion of Fights Involving Alcohol

Size	Athletes			Non-Athletes			Total		
	N	*M*	*SD*	*N*	*M*	*SD*	*N*	*M*	*SD*
	Number of Fights								
Bigger	46	1.28	1.97	46	0.82	1.96	92	1.05	1.97
Smaller	40	0.32	0.94	40	0.25	0.71	80	0.29	0.83
	Proportion of Fights Involving Alcohol								
Bigger	23	.58	.43	12	.21	.29	35	.70	.41
Smaller	5	.27	.43	5	.53	.51	10	.40	.47
Total	28	.52	.44	17	.80	.39	45	.63	.44

Discussion

Matching of Athletes and Non-athletes

The purpose of this study was to compare self-reported hostile aggression between contact and no contact athletes, and between each group of athletes and matched control groups of non-athletes. The matching was successful in that each group of non-athletes was similar to their athletic counterparts on age, year of study, height, and weight. The analyses also showed that contact athletes and their matched non-athlete controls were taller and heavier than no contact athletes and their matched controls. Other studies have either compared contact and no contact athletes without any non-athlete control group (e.g., Huang et al., 1999) or, if there were non-

athletes, they were not systematically matched to each athlete group (e.g., Patterson, 1974; Zillman et al., 1974).

Theoretical Implications

The results were clear. Self-reported hostile aggression on the AQ was higher for participants who were bigger in stature than those who were smaller, and it did not differ between athletes and non-athletes. So, although contact athletes reported more hostile aggression than no contact athletes, the corresponding group of bigger non-athletes also reported more hostile aggression than the corresponding group of smaller non-athletes. This means that present differences in self-reported hostile aggression can be attributed to differences in physical stature. The effect size of d = 0.45 is close to Cohen's (1977) standard of 0.50 for medium.

When the negative correlation between AQ scores and the BIDR (social desirability) was accounted for with ANCOVA, the effect of physical size remained, although statistical significance was slightly greater than the traditional .05 level. However, self-reported fighting was not correlated with social desirability, and it was also greater for bigger than for smaller participants. Moreover, this effect size was d = 2.08, which is much greater than Cohen's (1977) standard of 0.80 for large. This indicates that lower AQ scores may be somewhat contaminated by social desirability responding, but this bias did not seriously distort the main finding that hostile aggression was a function of physical size and not athletic participation.

The higher aggression in contact than in no contact athletes is consistent with learning theory. However, this theory also demands that aggression should be greater for contact athletes than for their bigger non-athlete counterparts, and similar for bigger and smaller non-athletes. In fact, aggression did not differ between contact athletes and their non-athlete counterparts and it was greater for bigger than for smaller non-athletes.

According to the motor-discharge catharsis theory, aggression would be generally lower in athletes than in non-athletes, but it was similar in both cases. In addition, displacement catharsis theory predicts that aggression would be lower in contact athletes compared to both non contact athletes and bigger non-athletes, but neither of these outcomes occurred. Clearly, the present results contradict the learning theory of aggression and both versions of the catharsis theory of aggression, at least as applied to sport.

On the other hand, this study provides some support for the selection hypothesis over the developmental hypothesis of athlete aggression. Aggression was a function of size, which means that it was higher for contact (bigger) athletes compared to smaller non-athletes but was similar for contact athletes and bigger non-athletes. This implies that bigger people are more likely to be attracted and more likely to be chosen for high contact sport than for no contact sport. In addition, for contact athletes, AQ scores and reported number of fights did not increase over the four years of study compared to the other groups, as would be predicted by the developmental hypothesis.

Other Implications

Bearing in mind the unequal and sometimes limited sample sizes for the number of people in

each condition who reported fighting, the proportion who stated that alcohol was involved was significantly higher for bigger than for smaller participants. This may mean that alcohol is more likely to fuel fighting in bigger than in smaller people, or that bigger people drink more.

Although athletic participation was not associated with overall hostile aggression or with reported frequency of fighting, the proportion of people reporting that alcohol was a factor in fighting was significantly smaller for athletes than for non-athletes. This could mean that athletes simply drink less than non-athletes, but surveys have shown that athletes actually drink more or similar amounts (Higgs, McKelvie, & Standing, 2001). Whatever the reason, the results belie the media image of athletes engaging in alcohol-fueled fighting (e.g., "Illinois State Players Charged in Frat Fight," 1998).

Furthermore, the most important practical implication of the findings from the aggression questionnaire and from the fighting reports is that they contradict the media image of the aggressive contact sport athlete. The fact that both measures of hostile aggression were higher for bigger than for smaller participants whether or not they were athletes highlight the fact that such reports fail to examine whether other people of similar size might also be aggressive.

Finally, although the results of the present study contradict the ideas that athletic activity fosters aggression in everyday life or provides a release from it, there may still be good reasons to be concerned about the level of aggression and violence both on and off the field. In particular, Tenenbaum et al. (1997), in their ISSP Position Statement on Violence inside sport, make nine recommendations for reducing violence in the athletic domain.

Conclusion

Scores on the aggression questionnaire (reflecting general levels of aggressive behavior and feelings), reported incidents of actual fighting, and reported frequency of alcohol involvement in fighting, were all higher contact than for no contact athletes. However, these differences also occurred with matched control groups of non-athletes, indicating that they were a function of physical stature rather than type of sport Overall, there was no support for the learning or catharsis theories of aggression in sport, although they are consistent with the idea that size is a factor in the selection of contact athletes. Together with the fact that alcohol was stated to be a factor in fighting less often for athletes than for non-athletes, the results undermine the media image of the aggressive, drunken athlete, at least for university students.

Future research should obtain systematic information about off-field aggression in athletes at various levels of expertise in various events, perhaps comparing team vs. individual as well as contact vs. no contact sports. Because the media has profiled cases of aggression in professional athletes, this group is of particular interest. Given that the present matching technique was successful in revealing the relationship between size and aggression, it should be employed to control for physical variables and others such as social background and level of education.

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Footnote. Recently, the dichotomy between hostile and instrumental aggression has been questioned by Bushman and Anderson (2001), who argue that it is confounded with automatic-controlled processing and does not take account of aggression stemming from more than one motive. However, the framework is retained here, because the focus was on physical aggression with angry/hostile feelings, which is captured by the concept of hostile aggression.

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