Spectator Moods at an Aggressive Sports Event

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Mood scales were administered to spectators attending an especially violent ice hockey game (n = 117) and a relatively nonviolent game (n = 159). Subjects completed the scales either prior to the opening face-off, during the first or second period intermissions, or immediately following the match. The between-subjects design revealed an increase in spectator hostility accompanied by a quadratic arousal function for the violent game. The relationship between hostility (and arousal) and the period of play was best described by an inverted-U function. Arousal decreased at the nonviolent match. Other mood states were largely unaffected by the two games. The results were discussed with reference to three models of spectator moods in which outcome is featured as a major variable.

Field investigations of the effects of aggressive displays on observers have thus far focused on spectator hostility largely to the exclusion of other emotional states. For the most part, such studies have tested predictions originating with the major theories of human aggression, notably social learning theory (Bandura, 1973), the frustration-aggression hypothesis (Berkowitz, 1969; Dollard, Doob, Miller, Mowrer, & Sears, 1939) and several versions of a cathartic viewpoint (e.g., Dollard et al., 1939; Lorenz, 1966). Almost without exception (Kingsmore, 1970), these studies have revealed increases in hostility among spectators attending a variety of sports with aggressive content (Arms, Russell, & Sandilands, 1979; Goldstein & Arms, 1971; Leuck, Krahenbuhl, & Odenkirk, 1979; Sloan, 1979; Turner, 1970). This pattern of findings is entirely consistent with reviews of laboratory research which conclude that displays of aggression generally increase aggression in onlookers (e.g., Quany, 1976). Interestingly, few investigations (Arms, Russell, & Sandilands, 1980; Sloan, 1979) have assessed the impact of observing aggressive sports on the broader range of our emotions. One recent study (Arms et al., 1980) revealed that student spectators became increasingly negative in their moods as they witnessed professional wrestling, ice hockey, or even the nonaggressive control event (swimming). At the least, such evidence questions a common assumption that sports events are necessarily rich social occasions in which goodwill and gregariousness are fostered.

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among members of the audience (Mehrabian, 1976, p. 284). At the same time, some evidence (Bass, 1962; Sloan, 1979; Zillmann, Bryant, & Sapolsky, 1979) suggests that the success or failure of one’s team in competition may be an equally important determinant of the direction of mood changes.

Although the literature contains a qualitatively diverse assortment of theoretical and speculative positions (Sloan, 1979), several recent empirically based models of spectator moods offer testable predictions—particularly of hostility—arising from clearly specified antecedent variables. Mehrabian (1976) has proposed a general model predicting emotional responses on the basis of certain factors in the physical-social environment (e.g., pace of the sport, winning-losing, crowd size) which determine spectators’ levels of arousal, pleasure, and feelings of dominance. For example, a joyous mood is produced by the combination of high arousal, high pleasure, and dominance; high arousal, low pleasure, and dominance create anger. Inasmuch as losing produces low pleasure (Mehrabian, 1976, p. 285), increased hostility is predicted for those spectators who, as part of a capacity crowd, witness their favorite team in an exciting but losing effort. Winning under the same conditions should produce joy.

Inasmuch as Zillmann et al. (1979) used “appreciation” as the dependent measure in their investigations of the enjoyment of sports contests, their findings speak only indirectly to the question of spectator moods. That is, it remains to be determined how moods mediate enjoyment. Parenthetically, this question is a more complex matter than simply equating positive mood states with enjoyment; witness the successful melodrama where the audience weep continuously from beginning to end yet royally enjoy themselves. Using filmed segments of various sports, Zillmann et al. (1979) found support for the importance of (a) prior liking for a player or a team and (b), game outcome as predictors of audience enjoyment.

The above variables are also central to Sloan’s (1979) work on spectator moods. Using a mood adjective checklist, he found increases in anger among loyal Notre Dame basketball and football fans following losses; wins in both sports produced no pre-to postgame differences on this dimension. However, wins in these sports resulted in increased happiness (satisfaction) for basketball fans and increased benevolence for football fans, with both emotions decreasing with a loss. Only Notre Dame females, with no previous ties to the fighters on an amateur boxing card showed heightened hostility. Thus, Sloan’s (1979) model shares in the models’ common prediction of increased spectator hostility following a loss by a favorite team; hostility would not be expected to follow wins.

**Methodological Problems**

Investigations of the effects of observing combatant sports have typically compared pre- with postevent levels of spectators’ moods. Although such designs may provide evidence of the combined effects of watching aggressive sports, they fail to isolate that aspect of the stimulus complex, in which athletic aggression appears as but one element, which has induced a change in the mood(s) of spectators. For instance, the centrality of outcome in the models noted earlier strengthens a supposition that fluctuations in score may effect changes in mood as readily as aggressive displays. Other equally plausible rival explanations (e.g., halftime show, inept officiating) obviously remain to challenge the internal validity of such designs. As sug-
gested elsewhere (Arms et al., 1980), designs including additional data points at the intermission(s) would greatly improve the interpretability of results by providing a comparison of mood changes with a template of those expected and unexpected mood-altering events arising during the course of a contest. Moreover, intermediate data points further reduce the likelihood of Type II error in allowing any curvilinearity in the pattern of mood changes to be detected. Thus, whatever the emotional effects of viewing violent episodes, the significance of any changes will be tested by an overall $F$ value with no differences necessarily between the pre- and postgame measures. Finally, additional data points may provide some indication of the temporal effects associated with event-induced changes in mood, that is, whether they persist or quickly dissipate.

Most investigators (e.g., Leuck et al., 1979; Sloan, 1979; Zillmann et al., 1979) have operationally equated the outcome of a contest with the conclusion of play. Rather, it is suggested that for many fans the outcome is often determined at an earlier point in a contest. Outcome is a subjective judgment on the part of the individual spectators and may or may not coincide with the expiration of official playing time. Designs in which outcome is equated with that point in a match at which all but a few diehards are willing to concede defeat (or claim victory) may provide a more valid representation of the variable. Otherwise, effects attributed to outcome may instead have arisen from the agony of waiting out "the final whistle," particularly in matches where the play is lacklustre and/or the eventual outcome evident early in the contest.

As noted above, other mood states obviously covary with hostility, though not necessarily in the interdependently opposed fashion commonly believed. Moods anchoring ends of a bipolar dimension may in fact be functionally independent. Nowlis (1965) summarizes this important point: "Increases in hostility are not necessarily attended by decreases in social affection, increases in vigor not necessarily attended by decreases in fatigue, and so forth" (p. 360). Nevertheless, a comprehensive understanding of spectator effects is more likely to be realized with analyses highlighting the interplay between hostility and other emotions rather than isolating a single intrasubject response for investigation. For example, aggression is facilitated by general emotional arousal, especially in situations where aggressive cues are present (Berkowitz, 1974; Rule & Nesdale, 1976; Zillmann & Bryant, 1974). If, however, the aroused state is one of anger, it acts specifically to increase instigations to aggress (Rule & Nesdale, 1976). Thus, the magnitude of aggression resulting from observing player violence may in large measure be determined by pre-existing levels of spectator arousal. Similarly, the induction of incompatible moods and responses might be expected to interact with hostility to diminish its expression (Baron, 1976).

A further note concerns the choice of a "control" group which effectively serves to equate major aspects of the two events, for example, equivalent in all important respects save player aggression. Comparisons with another equally exciting but non-violent sport generally fall short of the mark. A host of rival explanations inevitably arises from differences in venue, audience composition, norms, time and tempo of play, and so on, to challenge an author's conclusions. A more conclusive examination of spectator effects may be realized by comparing violent and nonviolent games, hopefully with similar outcomes, in the same sport.

Thus, the present study was intended as an extension of previous work on spectator effects, with any changes in hostility being interpreted against the background of other, covarying mood states. A between-subjects design incorporated several of
the refinements suggested earlier in the hope that they will be shown to improve the quality of data and make the advantages of using sports crowds (Mann, 1979, p. 338; Russell, 1981) even more attractive.

**Game 1**

**Procedure**

Eight members of a senior research seminar served as experimenters. Following several discussions designed to standardize procedures, they attended a Western Hockey League (WHL) game to have a random sample of those in attendance complete the short form of the Nowlis (1965) Mood Adjective Check List (MACL). This version purports to measure one's current affective status along 11 factor-analytically derived dimensions (Nowlis, 1965). The dimensions of mood tapped by the scale include the following: aggression, anxiety, concentration, egotism, elation, fatigue, sadness, skepticism, social affection, surgency, and vigor. Following an earlier procedure (Arms et al., 1980), a single ad hoc adjective “aroused” was added to the scales.

Male and female adult spectators (N = 117) were approached individually prior to the opening face-off, at the conclusion of the first and second periods, and immediately following the game. The experimenters tactfully sought to enlist the cooperation of the nearest available person (not in conversation with others) within their assigned sections of the arena. Subjects were asked to assist the experimenter by completing a short mood scale for a class project at the university. Four persons declined. The scales took 3 to 5 minutes to complete, after which the subjects were thanked and any questions answered. Subjects remained anonymous, with the experimenters recording the subjects’ sex and an estimate of their ages. Separate two-way analyses of variance (sex x period of play) were conducted on the scores for each of the mood factors using an unweighted means solution.

**Results**

**Game Highlights.** The hockey game was a well-played, spirited contest in which the Lethbridge Broncos soundly defeated the visiting Billings Bighorns before a partisan crowd of 3,690. A victory was important to both teams insofar as Billings was first in the league standings with Lethbridge 10 points back in second place, a fact stressed in pregame media coverage. As noted in Figure 1, Lethbridge scored its first goal 3 minutes after the opening face-off and scored again 5 minutes later. At the 14-minute mark of the first period, Billings scored its first goal matched by Lethbridge’s third goal 30 sec later. From thereon, the Broncos maintained and extended their lead in a 7-3 victory. Furthermore, illegal player aggression (Russell, 1974) was concentrated in the last half of the second period when a total of 142 minutes in penalties was assessed, mostly for major infractions involving fighting. Only 8 minutes in minor penalties were awarded in the first period and 34 minutes in the final period. The game total of 184 minutes in penalties is 2.75 standard deviations above the mean of 56.2 (SD = 46.4) for the entire 432 league games played during the 1978-79 WHL season (Russell, Note 1).

The mean age of the subjects was 30.1 years (SD = 10.6). There was no relation-
ship between the sex of the experimenters and the sex of the subjects they contacted. Also, a sex by period analysis of subjects’ ages resulted in nonsignificant differences ($F = <1$).

Analyses of spectator moods revealed differences in aggression, $F (3, 109) = 3.18$, $p < .05$, and arousal $F (3, 109) = 3.65$, $p < .05$, over the course of the game. The period effect for aggression had significant linear, $F (1, 109) = 5.91$, $p < .05$, and marginally significant quadratic components, $F (1, 109) = 3.37$, $p < .10$; aggression increased until the end of the second period followed by a small decrease to the conclusion of the game. The arousal function was completely quadratic, $F (1, 109) = 9.96$, $p < .01$, with arousal being best described as an inverted-U shaped function of period. Although neither interaction term was significant, males reported being significantly more aroused ($M = 1.53$) than females ($M = .95$), $F (1, 109) = 7.21$, $p < .01$. The only remaining Nowlis dimensions on which spectators differed were fatigue and concentration. Males concentrated more ($M = 4.24$) than females ($M = 3.15$), $F (1, 109) = 5.52$, $p < .05$. All of the other effects and their components produced $Fs < 1$. The period effect on fatigue interacted with sex, $F (3, 109) = 8.63$, $p < .01$. Orthogonal decomposition of this term yielded significance for the linear component, $F (1, 109) = 10.34$, $p < .01$. The linear component accounts for 40% of the interaction sums of squares and indicates a decrease (slope = −.9) in fatigue across periods for females and an increase (slope = .4) for males.
Score:

Broncos: 1 2 3 4 5 6 7 8 9 10 11
Tigers: 1 2 3 4 5

Figure 2 - Spectator aggression and arousal in relation to control game features.

Game 2

Procedure

In view of the absence of major sex differences above, only males (N=159) were approached at the second game. Otherwise, virtually the same procedures as those used at Game 1 were followed although a second group of seminar experimenters collected the data. Five men declined to participate.

Results

Game highlights. Apart from the goaltending, the match was well played and exciting to watch. The Broncos handily defeated the visiting Medicine Hat Tigers before a crowd of 3,721. Going into the game the Broncos trailed the Tigers by one point in the division standings. As noted in Figure 2, the Broncos led 5 to 4 at the end of the first period, were briefly tied early in the second period, and then scored six unanswered goals for a final 11 to 5 score.

Twenty, 16, and 10 minutes in penalties were awarded during the first, second, and third periods, respectively. The game total was \(-.22\) standard deviations below the annual mean, fortuitously meeting the criterion of a relatively nonaggressive game with an outcome similar to that of Game 1. As occurred in previous studies
(Arms et al., 1979; Goldstein & Arms, 1971), the outcome was—to a degree—controlled within the design insofar as subjects supported winning teams at aggressive and nonaggressive events. Generally, subjects’ teams have established early leads and won by lopsided scores.

An analysis of subjects’ ages ($M = 32.43$ years, $SD = 11.38$) revealed no differences across the four points at which measures were taken nor in age with the subjects in Game 1. Moreover, arousal and elation were the only spectator states which differed significantly over the course of the game, $F(3, 155) = 3.13, p < .05; F(3, 155) = 3.89, p < .05$. Although the period effect for elation had a significant cubic component, $F(1, 155) = 11.30, p < .01$, arousal had both significant linear, $F(1, 155) = 4.24, p < .05$, and cubic components, $F(1, 155) = 3.97, p < .05$. The linear component indicates an overall decline in arousal, whereas the cubic component indicates two slope changes along the way, that is, a staircase function. It should be noted that a scuffle in the stands involving the suspended Medicine Hat coach brought the crowd to its feet just prior to the final whistle. The effects of the incident—if any—would be by way of moderating the rate of decline of the hostility and arousal functions, in effect increasing Beta error.

**Discussion**

Although these results support a general conclusion that displays of aggression enhance hostility in the observer, there was an equally important demonstration of the fundamental role of arousal. Arousal followed an inverted-U course over the violent game and decreased at the comparison game, with a corresponding increase in hostility occurring only in the former, a game replete with aggressive cues. This basic, facilitative role of arousal in providing a necessary though not sufficient condition for aggression is recognized in a number of theoretical viewpoints (Berkowitz, 1974; Rule & Nesdale, 1976; Tedeschi, Smith, & Brown, 1974). Furthermore, although spectator hostility and arousal ran parallel courses during the two games, their rise and fall also closely matched the underlying frequencies of player aggression.

Insofar as an inverted-U function described the effects of player aggression on spectator hostility and arousal, an assumption that such effects are short-lived draws a modicum of support. Laboratory evidence attesting to the transitory nature of physiological arousal has been provided by Zillmann and Bryant (1974). The sympathetic arousal of subjects required to vigorously pedal a bicycle ergometer returned to base level after 6 minutes. However, the authors correctly caution that anger-related cognitions may be generated during high arousal such that an aroused state may persist after an original provocation has been withdrawn and long after it would normally be expected to subside. In sports, the targets of spectators’ wrath—a violent player or an inept official—typically continue to participate in the contest and reappear in future games, thereby re-establishing themselves in the cognitions of fans long after their original provocative actions.

Although violent displays generally elicit increased spectator hostility, changes in this and other emotions may be masked in before-after designs. Such designs assume monotonicity in that an emotion, once aroused, is seen to persist until the conclusion of the event when the increase (or decrease) is captured by the postevent measure. However, if changes in mood are short-lived—and there is a hint of this in Figure
Such a design applied to Game 1 would have resulted in a conclusion that viewing aggression does not lead to increases in spectator hostility, that is, the pre- and postgame measures did not differ significantly. Using intermediate data points—which revealed an inverted-U function—the opposite conclusion was reached. If outbursts of player violence produce transitory increases in arousal and hostility, then violence occurring early in a contest is not apt to result in significant differences, whereas violence occurring late is likely to produce the predicted increase. The same level of violence occurring midway in a contest or dispersed will likely produce weak or marginal effects.

Apart from increasing fatigue and decreasing concentration among the males of Game 1 and changes in elation during Game 2, the remaining emotional states were surprisingly unaffected by the experience. The forerunner to the present study (Arms et al., 1980) revealed a marked deterioration in the quality of interpersonal relations (social affection, surgency) among spectators attending ice hockey, professional wrestling, and swimming. Subject differences alone, however, may be sufficient to account for the discrepancy in emotional responsiveness. The former subjects were university students for whom attendance earned a course bonus and who would otherwise be unlikely to attend such events. This, and the uncertainties associated with an evening in novel surroundings, may have made it less of a social occasion than would be true for those who regularly attend these events. The present (paying) fans attending out of interest could be expected to experience the evening in more positive terms.

Although the data are meagre, studies of sports spectatorship to date suggest that most of the mood spectrum is unaffected by exposure to dramatic displays of interpersonal aggression. The present results, Sloan's (1979) study of Notre Dame fans, and even the Arms et al. (1980) investigation revealed changes on relatively few dimensions. Only when a specific behavior is repeatedly and forcefully presented (e.g., fighting) to aroused observers is its emotional counterpart, that is, hostility, seemingly induced in the observer. Arousal notwithstanding, cognate responses such as concentration, fatigue, and elation in the present study may also be engaged, though not reliably so. However, a number of investigations in which subjects were shown films carefully chosen to induce a specific mood (Nowlis, 1965) revealed significant changes on many of the other MAACL dimensions. Certainly, the conditions surrounding sports spectatorship and film viewing are quite different, although at this juncture it remains a moot point whether our moods are necessarily less responsive in the former circumstances.

Outcome is a central tenet of the models of spectator moods noted earlier (Mehrabian, 1976; Sloan, 1979; Zillmann et al., 1979) with negative states, that is, anger, unappreciation, predicted to follow losses but not victories. With few exceptions (Sloan, 1979), the present and earlier studies have consistently shown that supporters of winning football (Goldstein & Arms, 1971), basketball (Leuck et al., 1979), wrestling, and hockey teams (Arms et al., 1979) exhibit increases in hostility. Data at the participant level are inconclusive in demonstrating outcome effects. For example, while management personnel in intergroup competition showed an increase in aggression following a loss (Bass, 1962), winners in a reaction time competition became increasingly aggressive over trials towards their passive opponents; losers maintained a constant level (Borden & Taylor, 1976). If losses are to be regarded as (vicarious) frustrations for those fans who identify closely with a player or team,
then the frustration-aggression hypothesis (Berkowitz, 1969) makes an obvious prediction about their mood. However, social learning theory (Bandura, 1973) would additionally predict increased hostility among supporters of winning teams insofar as witnessing aggression is presumed to weaken overall inhibitions against its expression. The fact of evidence showing increased hostility among fans of both losing and winning teams offers strong support for a social learning interpretation, though not necessarily at the expense of the frustration-aggression position. Quite possibly, both viewing aggression and outcome can influence the hostility of loyal spectators. Under circumstances where their influences are found to be pitted against each other rather than acting in concert (e.g., winning a violent contest), however, the negative influence arising from observing violence may prevail.

One explanation for the discrepancy between Sloan’s (1979) results and those cited above may lie with his having used a composite index of outcome which included the difficulty of wins and the “significance” of a game, almost certainly major and independent variables in their own right. It seems likely on intuitive grounds at least, that additional variables mediate fans’ reactions to losing, for example, fans’ initial expectations of success (Mann, 1974). Furthermore, an opponent’s aggressive intent has previously been shown to interact with the degree of defeat to influence one’s aggression (Epstein & Taylor, 1967). In view of the confounding influence of several variables, the effects of outcome might be more profitably investigated in the context of nonaggressive competitions. Otherwise, laboratory investigations with their characteristically strong element of control may offer the best hope for unraveling the complexities of outcome and its relationships to subjects’ moods. Two studies exemplifying this complementary approach are those of Bass (1962) and, more recently, Zillmann et al. (1979), who manipulated outcome by skillfully editing film footage of forgotten tennis matches.

**Conclusion**

The present results generally comment favorably on the methodological refinements suggested earlier. The more comprehensive picture expected to emerge with a full complement of mood measures was realized only to the extent that the contribution of arousal to spectator hostility was demonstrated; other mood states remained largely unaffected. Also, the collection of data at intermediate points resulted in significant quadratic components in the relationships between the period of play and spectators’ hostility and arousal, whereas a same-sport comparison event automatically ruled out a number of rival explanations for the results obtained. Three models of mood in which outcome appears as a central variable were unsupported: Easy wins by the home team were associated with heightened arousal and hostility on the part of their fans. Finally, it was suggested that operationalizing outcome as the margin of difference in score rather than win/loss and allowing for its assessment prior to the conclusion of a contest may serve to clarify its role. Investigations designed to determine the most sensitive measure of outcome and the confounding role of ancillary variables should assume some priority if the concept is to be established as an important predictor of spectators’ moods.

References


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