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Spectators' Perceptions of Positive Momentum While Attending NCAA Men's and Women's Basketball Regular Season Contests: Exploring the Antecedents-Consequences Model

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ABSTRACT

Momentum has been a difficult concept for researchers to quantify (Burke, Burke, & Joyner, 1999; Burke, Edwards, Weigand, & Weinberg, 1997; Burke & Houseworth, 1995; Vergin, 2000). While many sport enthusiasts proclaim the importance of momentum sequences in games and contests, sport scientists have had difficulty empirically substantiating that momentum actually exists. The present study attempted to explore the Antecedents-Consequences Model (Vallerand, Colavecchio, & Pelletier, 1988) which stated that momentum is influenced by situational and/or personal variables, and may be experienced by spectators and athletes, although spectators' experiences of momentum are more likely to be less intense. While investigating athletes' perceptions of positive momentum during a game/contest may prove too intrusive, spectators' perceptions of momentum may be collected with minimal intrusion. The current investigation utilized multiple trained observers attending collegiate basketball games to record perceived game events that started and ended positive momentum, as well as the game times when the momentum events occurred. Further, environmental and game events occurring during momentum periods were noted. As predicted, and in concert with previous literature, the results indicated only a low to moderate level of agreement between experienced spectators. The results suggested that momentum is still an elusive concept to scientifically validate, or, that attempts to empirically measure momentum have not been scientifically sound.

Introduction

Momentum is a common term in the vernacular of the sporting world but has been a difficult concept to scientifically quantify (Burke & Houseworth, 1995; Vergin, 2000) and has been

referred to as a subjective variable (Cornelius, Silva, Conroy, & Peterson, 1997; Vallerand, Colavecchio, & Pelletier, 1988). Momentum has been a topic of research for more than 20 years (For an extensive review of past momentum research, please see Burke, Edwards, Weigand, & Weinberg, 1997.) in sports such as basketball, football, hockey, racquetball, tennis, volleyball, and laboratory studies (Silva, Cornelius, & Finch, 1992). Researchers have provided several similar definitions to describe this phenomenon, some definitions distinguishing between positive and negative momentum (See Adler, 1981; Adler & Adler, 1978; Alderman, 1974; Burke et al., 1997; Iso-Ahola & Mobily, 1980; Taylor & Demick, 1984; Vallerand et al., 1988). Burke et al. defined positive momentum as a psychological state of mind affecting performance in a positive direction where most everything seems to "go right" for the performer(s). For example, within a short time frame in a basketball game a player may steal the ball from the opponent, make a good pass, get the next rebound, and score two points. Negative momentum was defined as a psychological state of mind affecting performance in a negative direction where most everything seems to "go wrong" for the performer(s) (Burke et al.). For example, within a short time frame in a basketball game a player may commit a foul, get a pass stolen, go in the incorrect direction on a play, and get a shot blocked. Typically past research has attempted to examine only positive momentum sequences. To investigate this evasive concept researchers have analyzed winning and losing streaks throughout the course of sports seasons and other performance variables in similar activities (See Burke et al., 1997, Mack & Stephens, 2000; & Vergin, 2000). However, relatively few investigations have examined momentum within the context of a theory or model. Vallerand, Colavecchio, and Pelletier (1988) proposed the Antecedents-Consequences model (ACM) suggesting that perceptions of momentum are influenced by situational (i.e., perceived situational control, crowd behavior, task difficulty, game/contest importance) and personal (i.e., skill level, need for personal control, sport competition anxiety, motivation) variables. ACM stated that previous research on momentum has confounding variables because momentum has been defined as increased performance, while also projecting that increased performance causes momentum! The Antecedents-Consequences model also proposed that momentum may be perceived by both participants and spectators. Vallerand et al. suggested that while participants (athletes) experience various motivations and emotions, observers (spectators) may only perceive athletes' experiences, without the spectators necessarily experiencing these same emotions and motivations (at least not on the same level as the participating athletes). In other words the spectators' experiences are usually not as intense as the athletes (Vallerand et al.). To explore the spectator aspect of the ACM, Burke, Edwards, Weigand, and Weinberg (1997) investigated momentum by analyzing the amount of rater (spectators) agreement of perceived momentum changes while watching videos of a basketball game and tennis match. Results indicated very low agreement in events that began or ended momentum periods. Another investigation employed one trained observer to record perceived momentum events at college and high school basketball games while in attendance at those games (Burke, Burke, & Joyner, 1999). The results suggested certain game actions (i.e., turnovers, steals crowd, noise) seemed to be associated with the beginning, maintaining, and ending of momentum, yet, the positive momentum team averaged scoring only five more points per momentum period than the team without positive momentum. To further test the Vallerand, Colavecchio, and Pelletier (1988) model and further attempt to quantify positive momentum, and as suggested by the Burke et al. (1999), the present study examined the level of agreement among several spectators' perceptions of positive momentum changes while attending men's and women's intercollegiate basketball games. Previous investigations have been negligent to utilize spectators' perceptions while actually attending sport

contests. While it may be too intrusive to ask athletes to indicate momentum perceptions during a contest, this type of investigation may be performed with spectators with limited, on-site intrusion. On the basis of the previous findings of Burke et al. (1997, 1999) showing difficulty in quantifying momentum, the hypothesis was that low to moderate levels of agreement between experienced basketball observers (spectators) would occur of the perceptions of positive momentum periods in intercollegiate basketball games, further substantiating the difficulty of quantifying momentum.

Method

Participants

Observers (*N*=8) who had competent knowledge of basketball (i.e., played and/or coached organized basketball) were trained to use an updated and more comprehensive version of a momentum questionnaire (Burke et al., 1999; see appendix) that focused on positive momentum (PM) while observing 12 different NCAA Division 1 men's and women's basketball games. Vallerand, et al. (1988) suggested that "experienced" observers (i.e., fans or athletes) can better recognize play in various situations than those with less experience. Up to four observers, located at various positions of the arena, separated from each other, were present at every game. The observers recorded perceived game events that started, maintained, and ended PM; time and duration of PM; game score at the beginning and end of PM; and environmental (i.e., crowd noise) and game events occurring during PM periods. The majority of the observers (92%) were able to view the games from beginning to end, while only 8% observed only the second half of the games.

Results

Over the 12 games observed, there was a total of 89 PM instances reported by the observers. The team with the PM (M = 7.36 SD = 5.17) scored significantly more points (p <.05) during the PM instance than the opposing team (M = 2.70 SD 3.25). The observers recorded the score at the time they felt PM began. To examine agreement among observers that PM was occurring, the recorded score had to be within a four-point range on each team's score at that point in the game to allow for a similar consensus among the trained observers. To allow flexibility to discern when similar momentum periods occurred as experienced by the spectators, a four-point game score range was utilized. At least two observers agreed on 40 of the 89 PM instances for a 45% agreement. These 40 instances occurred in 17 different PM periods.

The observers were asked to rate what started the PM (i.e., good performance by one team, poor performance by one team, or a combination of both). Of the 89 PM instances, the observers felt that 65 (80.2%) was started by a good performance by one team. For the 17 periods where there was agreement among observers, there was 60% (8 of 14, three missing) agreement as to what started the PM. The most common event occurring at the start of the PM instance was a three-point shot (n = 33), followed by a caused turnover (n = 25), a two-point lay-up (n = 20), a steal (n = 17), a two-point jump shot (n = 17), and a defensive stop (n = 14).

The observers recorded the events occurring during the PM period. The most common events

occurring during PM were a caused turnover (*n* = 38), a two-point lay-up (*n* = 37), a three-point shot (*n* =36), a steal (*n* = 35), a defensive stop (*n* = 34), and a two-point jump shot (*n* =33).

The observers recorded the events occurring when the PM period ended. The two most common events occurring at the end of the PM period were the opponent calling time out (*n* = 22) and the PM team committing a foul (*n* = 22). Other commonly occurring events were an opponent's two-point jump shot (*n* = 18), an opponent's caused turnover (*n* = 15), an opponent's steal (*n* = 12), an opponent's two-point lay-up (*n* = 12), and an opponent's three-point shot (*n* = 12).

Discussion

The hypothesis that only low to moderate levels of agreement between experienced basketball observers (spectators) would occur of the perceptions of positive momentum periods in intercollegiate basketball games was supported. Results indicated that observer agreement was only moderate (ranging from 45% to 80%) suggesting as past researchers have stated (Burke & Houseworth, 1995; Vergin, 2000), that momentum is still a difficult concept to scientifically quantify. The strongest agreement (80.2%) among the experienced observers was that PM was begun by a "good performance" by one of the teams, rather than by a poor performance by the opponent, or combination of good play by one team and poor play by the opponent. This was in agreement with the Burke et al. (1997) study which found that PM in tennis was begun most often begun by a "good performance" by one player (73%) and PM in basketball was begun by a "good performance" by one team (61%). However, this finding did not concur with the Burke et al. (1999) basketball study where PM was found to most often occur due to a combination of good performance by one team and poor performance by the opponent (84%), while PM beginning by a "good performance" by one team was found infrequently (13.7%).

Four of the most common game actions reported to have begun the PM sequences (three-point shot, caused turnover, steal, defensive stop) were in agreement with the Burke et al. (1999) findings, with both studies indicating that making a three-point attempt was the most common event beginning PM. In agreement with Burke et al., three specific game actions during a PM period reported to occur most often were a caused turnover, steal, and defensive stop, with a turnover being the most common event in both studies. Again, concurring with Burke et al. three game actions were common in both studies as ending PM. These game actions were calling a time-out, a foul being called, and a turnover. While the Burke et al. investigation reported a turnover by the PM team usually ended PM, the present study reported the opponent calling a time out most often ended PM periods.

One of the more intriguing common results between the current study and the Burke et al. (1999) exploration was the number of points scored by the PM team during a PM sequence. Both studies reported (a statistically significant) only five more points were scored by the PM team! The current study indicated a mean of 7.36 (*SD* = 5.17) points for the PM team and mean of 2.70 (*SD* = 3.25) points for the opposing team, while the Burke et al. investigation reported a mean of 7.58 (*SD* = 3.66) points for the PM team and a mean of 2.62 (*SD* = 2.32) points for the opponents. While a five-point advantage during one PM period may not be considered "practically significant" to many basketball afficionados, having more than one typical PM sequence,

especially at crucial times during games, may be advantageous. Also, as stated by Vallerand et al., perceptions of momentum are subjective, therefore open to different interpretation.

Overall, experienced basketball observers' agreement regarding the occurrence of, and game actions relating to, positive momentum periods was moderate, at best. Although the Antecedents-Consequences model (Vallerand, et al., 1988) seems to be a promising conceptualization of momentum, future studies are necessary to gauge the effectiveness viewing perceptions of momentum by spectators and/or participants as influenced by situational and personal variables (particularly the need for personal control). Sport science researchers may wish to explore potential differences in momentum perceptions by level of experience (i.e., college vs. professional), gender, and sport (i.e., team vs. individual). Future studies may also attempt to discover whether momentum gained in one game/contest may continue in successive games/contets. Investigations focusing on the perceptions of negative momentum sequences should also be undertaken to better understand this evasive phenomenon. Also, researchers must be aware that certain contests may not have perceived "momentum" periods, which may significantly impact data collection. Finally, researchers should utilize both quantitative and qualitative methodology to better comprehend and understand the variables that play a role in perceptions of positive and negative momentum in sport.

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Appendix

Positive Momentum Occurrences for Either Team

Date_____ Observer's Name_____

Team Name_____ Men's or Women's Contest (Circle one)

Game Time MO Began_____(Circle= 1st or 2nd half) Game Score_____(Circle MO team's score)

Circle one and explain: MO began by:

a) good performance by one team

b) poor performance by one team

c) a combination of both

Describe game action(s)_____

Indicate acts in order of occurrence **BEGINNING** MO (1st act= 1; 2nd act= 2, etc.)

_____ blocked shot

_____ caused turnover

_____ crowd noise

_____ defensive stop

_____ dunk

_____ great pass

_____ rebound (Circle= off or def)

_____ steal

_____ unanswered points (amount _____)

_____ 2 point lay up

_____ 2 point jump shot

_____ 3 point play (made basket & free throw)

_____ 3 point shot

Other_____

Place a check mark for each action occurring for the MO Team **DURING** the momentum period.

_____ blocked shot

_____ caused turnover

_____ crowd noise

_____ defensive stop

_____ dunk

_____ great pass

_____ rebound (Circle= off or def)

_____ steal

_____ unanswered points (amount _____)

_____ 2 point lay up

_____ 2 point jump shot

_____ 3 point play (made basket & free throw)

_____ 3 point shot

Other_____

class=Section2>

Indicate action(s) in order of occurrence **ENDING** MO (1st act= 1; 2nd act= 2, etc.)

Game Time MO ended_____(Circle= 1st or 2nd half) Game Score_____(Circle MO team's score)

Opposing Team Action

_____ blocked shot

_____ caused turnover

_____ defensive stop

_____ dunk

_____ great pass

_____ steal

_____ time out

_____ unanswered points (amount _____)

_____ 2 point lay up

_____ 2 point jump shot

_____ rebound (Circle= off or def)

_____ 3 point play (made basket & free throw)

_____ 3 point shot

Other _____

MO Team Action

_____ committed foul

_____ committed violation

_____ missed shot

_____ turnover (not a foul or violation)

Other _____

Positive Momentum

A psychological state of mind affecting performance in a positive direction where most everything seems to "go right" for the performer(s).

I was able to observe this contest:

_____ From beginning to end

_____ For the 1st half only

_____ For the 2nd half only

Other (Please specify the exact times)_____