

Is Emotional Valence Separable? Empirical Evidence for Mixed Emotions During Consumption of a Sporting Event.

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Can people experience two emotions of opposing valence, such as happiness and sadness, simultaneously? The concurrence of two opposite emotions is one of the most controversial questions in emotion research. To the extent that positive and negative emotions can co-occur, they have meaningful consequences. Evidence indicates that experiencing mixed emotions has a broad array of behavioral implications; mixed emotions can increase creativity (Fong, 2006), foster resistance against persuasion (Cavazza & Butera, 2002), and contribute to healthy coping with stressors (Coifman, Bonanno, & Rafaeli, 2007). Despite its psychological importance, however, most researchers have examined positive and negative emotions separately.

There are two perspectives regarding the affective system (Larsen & McGraw, 2011). The first view is to consider positive and negative emotions as “semantic opposite labels for different regions of a single dimension” (Schimmack, 2001, p. 81). In this perspective, the experiences of hot and cold are inseparable such that feelings of hot preclude feelings of cold and vice versa. A second view of the affective system is to consider positive and negative emotions as two distinct feelings. For example, hunger and thirst are different feelings that can be experienced simultaneously (Cacioppo & Berntson, 1994). This line of thought raises the possibility that an individual can feel positive and negative emotions at the same time.

Positive and negative emotions have been acknowledged as two ends of a continuum, and thus are viewed as mutually exclusive (Valence-Arousal Model; Russell, 1980) or negatively correlated (Positive Activation/Negative Activation Model; Watson & Tellegen, 1985). In contrast, Cacioppo and Berntson’s (1994) Evaluative Space Model (ESM) includes the premise that different emotions that are of opposite valence can be experienced simultaneously. The concurrence of happiness and sadness has been demonstrated in a variety of studies, ranging from important life events such as becoming a parent (Fischer & Gainer, 1993), a wedding (Otnes, Lowrey, & Shrum, 1997), watching a movie (Carrera & Oceja, 2007), or listening to music (Hunter, Schellenberg, & Schimmack, 2008). Although a growing number of emotion studies in psychology and marketing have provided evidence that an individual can simultaneously experience emotions of opposite valence, we are not aware of any studies that have examined whether sport consumers experience mixed emotions during game consumption. The purpose of this study was to assess whether positivity and negativity are irreducible in experience in the context of spectator sports.

Methods. Subjects were 82 undergraduate students at a large university in the southeastern United States. A National Collegiate Athletic Association (NCAA) Division I football team in a major conference was chosen as the focal sport team. To test whether positive emotion is generally evoked in a straight win game and negative emotion in a straight loss game, and mixed emotions are evoked in a disappointing win (i.e., a team won, but there is some level of disappointment with the team performance) and a relieving loss (i.e., a team lost, but there is some level of appreciation with the team performance), each participant was randomly assigned to watch one of four college football video clips containing different game outcomes. The video clips were presented on a computer monitor. Participants’ emotions were assessed two ways; (1) the actual experience of emotion and (2) emotions recalled retrospectively. To measure the real time emotion, the Evaluative Space Grid (Larsen et al., 2009) was used to capture ratings of happiness and sadness (ranging from 0 to 6) every 500 milliseconds. A simple-unipolar measure (ranging from 0 to 6) was used to assess the intensity of emotion an individual experienced immediately after watching a video clip. To quantify the degree to which each participant experienced mixed emotions, the MIN[Happy, Sad] statistic was used (Schimmack, 2001). The MIN statistic assumes the value of lower rating. For example, if an individual reports feeling extremely happy (H = 6) and a bit sad (S = 2), the MIN would indicate that this individual has mixed feelings of mild intensity (MIN = 2). To check whether the four different game outcomes were successfully

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manipulated, a multiple choice question was given to indicate which of the game outcome the participants believe best describes the video clip they watched.

Results. The 82 participants were randomly assigned to the straight win ($n = 20$), disappointing win ($n = 20$), straight loss ($n=20$), and relieving loss games ($n=22$). Two participants assigned to the relieving loss game failed to correctly answer the manipulation check question; the ESG data from one participant assigned to the straight loss game were lost due to computer error. Their data were removed, leaving a sample size of 79 (36 women). To examine the patterns of emotions in response to four different game outcomes, the mean number of emotion ratings was analyzed through a 4 (game outcome: straight win, disappointing win, straight loss, and relieving loss) \times 2 (response format: ESG, simple unipolar) mixed model ANOVA, with game outcome as a between-subjects variable and response format as a within-subjects variable. This ANOVA yielded main effects of game outcome [happiness: $F(3, 75) = 172.78, \eta^2 = 0.87, p < .01$; sadness: $F(3, 75) = 66.92, \eta^2 = 0.73, p < .01$; and mixed emotions: $F(3, 75) = 36.34, \eta^2 = 0.60, p < .01$] and response format [happiness: $F(1, 75) = 23.24, \eta^2 = 0.20, p < .01$; sadness: $F(1, 75) = 75.59, \eta^2 = 0.40, p < .01$; and mixed emotions: $F(1, 75) = 75.41, \eta^2 = 0.42, p < .01$]. Participants reported higher ratings of happiness ($M = 3.2, SD = 2.0$), sadness ($M = 3.2, SD = 2.2$), and mixed emotions ($M = 1.6, SD = 1.4$) in the simple unipolar format than those in the ESG format [happiness ($M = 2.7, SD = 1.7$); sadness ($M = 2.1, SD = 1.7$); and mixed emotions ($M = 0.5, SD = 0.6$)]. Importantly, a Games-Howell post-hoc test revealed that participants who watched the disappointing win game ($M = 1.39, 95\% \text{ CI } [1.14, 1.64]$) reported significantly more intense mixed emotions than those who watched the straight win game ($M = 0.27, 95\% \text{ CI } [0.02, 0.52]$), $p < .01$. Further, participants who watched the relieving loss game ($M = 1.92, 95\% \text{ CI } [1.67, 2.17]$) reported significantly more intense mixed emotions than those who watched the straight loss games ($M = 0.54, 95\% \text{ CI } [0.29, 0.80]$), $p < .01$. To gauge if there was evidence of validity for the ESG measure, we averaged happiness ratings of the straight loss game along with the sadness ratings of the straight win game into a single index of anomalous ratings (Larsen et al., 2009). This is because happiness ratings of a straight loss game and sadness ratings of a straight win game should be lower in the ESG format than in the simple unipolar format. The mean number of emotion ratings was analyzed through a one-way ANOVA with response format as a between-subjects factor. The effect of response format was significant [Welch's $F(1, 46.37) = 10.457, \omega^2 = 0.20, p < .01$]: the anomalous ratings were higher in the simple unipolar format ($M = 0.64, SD = 0.87$) than those in the ESG format ($M = 0.16, SD = 0.29$), thereby providing evidence of convergent validity.

Conclusion. This study provides initial evidence that sport consumers can feel happy and sad simultaneously during game consumption. The results of this study extend previous sport consumer emotion studies involving less sophisticated measures of emotions by providing evidence that recall-based measures provided higher ratings of sadness in the straight win game and happiness in the straight loss game than those collected in real time (i.e., ESG). With regards to the implications for contemporary models of the structure of affect, our results were inconsistent with the Russell's (1980) valence-arousal model that happiness and sadness are mutually exclusive, but were consistent with the Caioppo and Berntson's (1994) ESM that happiness and sadness can coexist. Taken together, our evidence for mixed emotions during game consumption implies that a more complete understanding of emotional experience in the spectator sports setting requires conceptualizing emotional valence as separable.