



A descriptive study of emotional process during competition: Nature, frequency, direction, duration and co-occurrence of discrete emotions

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ABSTRACT

Objectives: The purpose of this study was to offer a view of emotional process during competition through a naturalistic video-assisted approach. This study provides descriptive evidence relating to the nature, frequency, co-occurrence, duration and direction of all the discrete emotions experienced by athletes while competing.

Design: Qualitative video-assisted case study.

Methods: Thirty self-confrontation interviews were conducted with national table-tennis players using the videotapes of high-stakes table-tennis matches. Quantitative analyses of interview texts (i.e., qualitative data of interviews transcribed verbatim) allowed us to extract the following quantitative variables: (a) nature, (b) frequency, (c) duration, (d) co-occurrence, and (e) direction of emotions.

Results: Quantitative analyses of participants' transcriptions revealed the presence of twelve discrete emotions (self-, other- and thing-oriented anger, anxiety, discouragement, disappointment, disgust, joy, serenity, relief, pride, and hope), for a total of 861 single-point and 177 multiple-point emotions. Differences on the frequency, direction, duration and co-occurrence of emotions have been highlighted with regards to the nature of emotions. Differences on the nature, frequency, co-occurrence and direction have also been highlighted with regards to the emotions' duration.

Conclusions: The predominant focus in sport psychology has been on pre-performance emotions, with far less attention paid to the emotions experienced by athletes during competition. Support was provided for the notion of emotional blend and for the assessment of real proportions of discrete emotions and emotions' direction during competition.

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Investigations on the concept of emotion in sport settings have mainly studied pre-competitive anxiety (Cerin, Szabo, Hunt, & Williams, 2000; Hanin, 2000; Jones, 1995; Mellalieu, Hanton, & Fletcher, 2006). This strong reliance on anxiety is problematic since athletes' emotional experiences can not be accurately described in terms of presence or lack of anxiety (Cerin, 2003; Jones & Hanton, 2001). In addition, although emotions are constantly modified during sport competition through the process of cognitive appraisal (Cerin et al., 2000; Lazarus, 1999, 2000), few studies were designed to investigate the discrete emotions (e.g., anger, discouragement, joy, relief) *actually* experienced by athletes *while competing* (e.g., Gould, 2000; Jones, Mace, & Williams, 2000;

Martinent & Ferrand, 2009; Robazza, Bortoli, & Nougier, 1999; Sève, Ria, Poizat, Saury, & Durand, 2007). Determining the nature of all the discrete emotions experienced during competition, their frequency as well as their perceived enhancing or impairing effects on sport performance is crucial for providing an accurate description of athletes' emotional process while competing. These data could help coach and sport psychologist in assisting athletes to cope with their emotions actually experienced while competing.

Using Lazarus's (1999, 2000) cognitive-motivational-relational theory of emotion, discrete emotion is conceptualised as an unfolding process reflecting person–environment relationships. Without the continuation of appraising, which contains motivational (e.g., person's goals, goal hierarchy) as well as cognitive (e.g., personal resources, environmental factors) contents, emotion disappears or changes, and the relational meaning is distinctive for each discrete emotion (Lazarus, 1999, 2000). Thus, to explore the emotional process during competition, it must be studied in its ecological situation and in close relationship with the judgements

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of the actors involved in using methods, such as narratives or video-assisted self-confrontation interviews (Hanin, 2003, Martinent & Ferrand, 2009; Sève et al., 2007).

A comprehensive analysis of emotion in sport requires an accurate description of their basic dimensions (Hanin, 2007). Whereas decades of research on emotion as typically used the dimensions of emotion valence (i.e., hedonic tone), emotion manifestation (i.e., cognitive labels, bodily response and behavioural displays) or emotion intensity (Hanin, 2003, 2007), Hanin (2000, 2003, 2007) have highlighted a need to go beyond these widely accepted dimensions to depict a more complete picture of emotional experience. The Individual Zone of Optimal Functioning model (IZOF, Hanin, 2003, 2007) proposed an alternative multidimensional approach of five defining characteristics for the description of performance related emotional experiences (Hanin, 2003, 2007). *Form* (e.g., cognitive, motivational, bodily-somatic, behavioural), *intensity* and *content* (e.g., nature) capture the structure of emotional experiences whereas *context* (e.g., setting, situation) and *time* (e.g., duration, frequency) characterise dynamics of performers' subjective experiences in a specific social setting (Hanin, 2003, 2007). Following the call of several scholars to include other dimension of emotional experience than intensity alone (Cerin et al., 2000; Hanin, 2003; Mellalieu et al., 2006; Sève et al., 2007), the present study explores the content (i.e., nature, co-occurrence and direction) and time (i.e., duration and frequency) dimensions of athletes' emotional experience while competing by adopting a naturalistic video-assisted approach.

Because emotion theorists differ about the exact list of discrete emotions, a primary empirical and theoretical concern is to identify the *nature* of the emotions experienced by athletes and their respective *frequency* (Hanin, 2007; Lazarus, 2000). Emotion researchers (Diener, Larsen, Levine, & Emmons, 1985; Kardum, 1999) suggest that frequency and intensity represent conceptually and experimentally different dimensions which independently contribute to affective experiences. To identify the nature of all discrete emotions experienced by athletes while competing and their respective frequency (i.e., how often an athlete experience a particular discrete emotion) could inform coach and sport psychologist on the prevalence with which athletes experience discrete emotions during competition and thus orient their interventions. Gould (2000) showed that anxiety (11.3%), excitement (9.5%), joy (7.7%) and anger (6.3%) were the emotions the most experienced by athletes during competition. However, the fact that an athlete experiences anxiety or anger does not indicate how often (i.e., frequency) he experiences these emotions during competition. Sève et al. (2007) investigated emotional process of top-level table-tennis players during four high-stakes matches. Even if they did not explicitly measure discrete emotions' frequency, their results indicate that irritation (21.5%), pleasure (17%), confidence (14%), disappointment (11.5%), worry (11.5%) and displeasure (10.4%) were the emotion the most often experienced. Given the specificity of Sève et al. (2007) sample (i.e., three top-level table-tennis players from the French Men's table-tennis team), further research is needed to provide useful information in relation to the frequency and nature of discrete emotions during competition. To our knowledge, it is the first study within the literature which explores the frequency of discrete emotions experienced during competition.

Additionally, there is evidence in sport literature that a range of positive and negative emotions play a role in performance variability, by facilitating or impairing performance of athletes (Hanin, 2007; Martinent & Ferrand, 2009; Mellalieu et al., 2006; Pensgaard & Duda, 2003; Robazza & Bortoli, 2007; Vallerand & Blanchard, 2000). Although previous research has shown the importance of identifying the athletes' perceived beneficial or harmful effects of

their emotions on their upcoming performance (i.e., *direction*) (Jones, 1995; Skinner & Brewer, 2004), to our knowledge, no study investigated the emotions' direction of all the discrete emotions experienced by athletes during competition. Identifying the proportion of each of the discrete emotions perceived by athletes as beneficial or harmful upon their upcoming performance may lead to effective interventions to assist athletes in managing efficaciously their emotions (Jones, 2003). For instance, sport psychologists could implement specific interventions based on the two constructs of energy mobilisation–demobilisation and energy utilisation–misuse postulated in the IZOF model (Hanin, 2000, 2007). Optimal pleasant emotions would help the performer to generate and use energy to sustain effort and to execute a task efficiently, whereas unpleasant emotions would facilitate energy production. In contrast, dysfunctional pleasant and unpleasant emotions would be detrimental in that they cause decreased effort, ineffective resource recruitment and use and/or energy misuse.

Although previous researcher suggested that the *duration* of emotion should be considered in a greater extend in future research (Cerin et al., 2000; Hanin, 2003, 2007), to our knowledge, no study, to date, investigated this point. It is somewhat surprising because this topic have special appeal for practitioners in sport psychology as it should orient their interventions. For instance, the significance of a discrete emotion which last minus that 1 s seem very different from one another which last a few minutes. Indeed, it would be fruitful to provide new insights into the emotional process by exploring the duration of distinct positive (e.g., joy, relief, pride, hope) and negative (e.g., anger, anxiety, discouragement) discrete emotions during competition.

Most of the research in sport psychology has focused on the investigation of pure emotion, such as anxiety (Hanin, 2007). This results in an oversimplified and incomplete description of the complex picture of athletes' emotional experience. Research conducted in real-life situations have shown that athletes experience often several emotions simultaneously (i.e., *co-occurrence of emotions*) (Hanin, 2000, 2003, 2007; Jones & Hanton, 2001; Schimmack, 2001; Vallerand & Blanchard, 2000). Hanin (2007) suggested that future research in sport psychology should focus on mixed pleasant and unpleasant emotions representing actually experienced emotional process rather than pure emotions. Despite his appeal to consider co-occurrence of discrete emotions in future research, to date, very few study have yet explored this topic.

In sum, it would be fruitful to depict a view of the emotional process, by gathering data relating to the nature, frequency, co-occurrence, duration and direction of all discrete emotions experienced by athletes while competing. For instance, we will explore the emotional process of discrete emotions (i.e., nature, frequency, duration, co-occurrence and direction) among a sample of national table-tennis players during competitive matches by adopting a naturalistic video-assisted approach. This methodology offers a means to gain insight into emotion that is being experienced even during the course of a competitive performance (Sève et al., 2007). The use of self-confrontation video-assisted interviews overcomes some limits of retrospective studies that dominate the literature. Participants are generally more likely to mention what discrete emotions they would normally and/or generally experience and how they would normally and/or generally interpret their emotions relating to their performance without reference to real-life situations whereas self-confrontation video-assisted interviews enable participants to state what they actually felt and how they actually interpret their discrete emotions in a particular naturalistic situation (Hanin, 2003, 2007; Martinent & Ferrand, 2009; Sève et al., 2007). Based on the extant sport psychology literature, the cognitive-motivational-relational theory of emotion (CMRT, Lazarus, 1999, 2000) and the IZOF model (IZOF, Hanin, 2000, 2007),

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