University of Thessaly

Department of Physical Education and Sport Sciences

Emotional Expression in Table Tennis

by

Julian Fritsch

The present thesis is submitted as Partial Fulfillment of the Requirements for the Degree of European Master of Sport and Exercise Psychology at The University of Thessaly in July 2015.

Approved by supervising committee:

Main Supervisor: Dr Antonis Hatzigeorgiadis

Supervisor 1: Dr Alexander Latinjak

Supervisor 2: Dr Nikos Zourbanos

Trikala, Greece [2015]

Declaration by Author

This thesis is composed of my original work, and contains no material previously published or written by another person except where due reference has been made in the text. I have clearly stated the contribution by others to jointly-authored works that I have included in my thesis. I have clearly stated the contribution of others to my thesis as a whole, including statistical assistance, survey design, data analysis, significant technical procedures, professional editorial advice, and any other original research work used or reported in my thesis. The content of my thesis is the result of work I have carried out since the commencement of my research higher degree candidature and does not include a substantial part of work that has been submitted to qualify for the award of any other degree or diploma in any university or other tertiary institution. I have clearly stated which parts of my thesis, if any, have been submitted to qualify for another award. I acknowledge that electronic and hard copies of my thesis must be lodged with the University Library. I acknowledge that copyright of all material contained in my thesis resides with the copyright holder(s) of that material.

_____

Julian Fritsch

Abstract

The purpose of this study was to investigate the role of emotional expression in table tennis. By using a naturalistic qualitative video-assisted approach 12 players participated in self-confrontational interviews. Players were first taped in a regular match in their on-going season and then based on the video material asked to comment on their emotional experience and expression in specific match scenes. It was revealed that the expression of both positive and negative emotions were modulated targeting the adversarial relationship, oneself, and to a lesser extent the social situation. Moreover, a wide range of cognitive and behavioral strategies were employed to mainly suppress the expression of negative, but also positive emotions. Positive emotions were primarily displayed by making a fist or vocal expressions. Finally, the occurrence of expressed positive and negative emotions was related to its intensity, the perception of the point lost or won, numerous situational factors, and personal factors. The findings clearly highlight the importance to further investigate the role of emotional expression in the context of competitive sports.

Keywords: Emotional expression, Expression regulation, Determinants of emotional expression

Table of Contents

List of Figures

Emotional Expression in Table Tennis

The sport context provides numerous occasions of athletes expressing emotions. Looking at existing literature, however, research focuses mainly on the emotional experience (e.g., Lazarus, 2000; Hanin & Ekkekakis, 2014) thereby neglecting the aspect of emotional expression. Along their courses, sport competitions involve many situations where an athlete can come closer to (e.g., by scoring a point) or move further away from (e.g., by losing a point) the ultimate goal of winning. Taking table tennis as an example, though, a similar type of situation, like winning a point, can prompt a wide range of diverse behaviors. While one player clenches his or her fist accompanied by a firm exclamation, a different player just goes back to his or her position for the next point. In fact, even the same player might show completely different reactions across such structurally similar situations.

Research shows that even an intense emotional experience does not always match with the expression (e.g., Ruiz-Belda, Fernández-Dols, Carrera, & Bachard, 2003; Crivelli, Carrera, & Fernández-Dols, 2015). These findings fit well with the constructional framework of emotions (e.g., Russell, 2009; Barrett 2009; Lindquist, 2013) denying the traditional view (e.g., Tomkins, 1962; Panksepp, 1998), of the existence of discrete emotions consisting of biologically determined interrelated patterns between subjective experience, physiological activity, and emotional expression. A central tenet of these constructional approaches is the concept of *core affect* as a constantly varying neurophysiological state which consists of the two dimensions valence and arousal creating a subjectively single feeling of good or bad, lethargic or energized (Russell, 2009). Consequently, an actual specific emotional episode is the product of a fluctuation in one's

core affect accompanied by constructional processes by the human mind.[1] These fluctuations can be triggered by a single significant event like scoring a goal, but more often by multiple simultaneous influences such as irrelevant conversations with one's teammates, memories of past matches, or simple diurnal cycles (Russell, 2009).

Another important factor explaining why athletes react differently to the same type of emotion-eliciting situations refers to the capability of individuals to modulate the experience as well as the expression of emotions (Koole, 2009; Webb, Miles, & Sheeran, 2012). The strategies people use more or less successfully to deal with their emotions are contained under the term *emotion regulation* (Gross & Thompson, 2007). In line with the constructional approach, emotion regulation is not about dealing with discrete emotional states like fear, anger, or joy, but rather about modulating the emotional states along the dimensions of valence and arousal (Koole, 2009).

Emotions in sport

It is widely recognized that emotions have some bearing on sport performance (Lazarus, 2000; Hanin & Ekkekakis, 2014). For this reason, it appears somewhat surprising that relatively little is understood about how and why emotions influence performance (Uphill, Groom, & Jones, 2014). Points of criticism in research often refer to the focus on anxiety (e.g., Woodman et al., 2009), the lack of assessment of emotions during competition (e.g., Sève, Ria, Poizat, Saury, & Durand, 2007), and the predominant use of laboratory measures (e.g., Uphill et al., 2014). Furthermore, only recent attempts have explicitly focused on the expressive components of an emotion, mainly as a form of nonverbal behavior (Moll, Jordet, & Pepping, 2010; Moesch, Kenttä,

[1] Depending on one's interpretation of the perceived changes in core affect, people can experience different emotions. While one player might feel nervous before a match, another player might perceive the same feeling as excitement.

Bäckström, & Mattsson, 2015). Despite the big scientific debate about the conceptualization of emotions (for a comparison of the different approaches, see Gross & Barrett, 2011), there is an agreement across these approaches that expressive components are a central feature of an emotional episode (Gross, 2015). To elaborate, emotions can be revealed through changes in facial (Matsumoto, Keltner, Shiota, O'Sullivan, & Frank, 2008) and vocal (Bachorowski & Owren, 2008) expressions as well as via body movements and postures (Dael, Mortillaro, & Scherer, 2012). In the following paragraphs, it will be substantiated why an explicit investigation of the expressive components might contribute to a better understanding of the emotion-performance relationship. For this purpose, plausible inter- and intrapersonal consequences of emotional expression have been distinguished (Uphill, McCarthy, & Jones, 2009).

Interpersonal consequences

In social psychology, a long tradition of research has examined how people actively look for cues in social interactions which can be used to classify people into different categories (Fiske & Taylor, 1991). By doing so, people obtain a higher sense of control over the interaction allowing them to take appropriate actions to reach their goals. Based on Warr and Knapper's (1968) schematic model of person perception, it is proposed that in sport competitions athletes constantly form impressions about the opponent's mental state which, in turn, affects the perceiver's cognitions, feelings, and behaviors (Greenlees, 2007). For this reason, it is not surprising that appearing confident is seen as an important source to gain a competitive edge over the opponent (Van Raalte, Brewer, Cornelius, & Petitpas, 2006).

Although some promising findings indicate that the expression of emotions can influence the opponent, the evidence is yet very sparse. For example, Moll et al. (2010) employing a quantitative observational coding system found a positive correlation between expressive celebrations

of football players after a successful penalty kick and the ultimate victory in the shootout. More interestingly, it could also be shown that after an expressive celebration the following opponent player was more likely to miss his shot. Statements of handball players to intentionally display collective joy after scoring in order to undermine the opponent's confidence (Ronglan, 2007) correspond with this finding. Furthermore, in a large project to improve the training of table tennis players, in total 42 matches of six elite French players were taped followed by self-confrontational interviews with regards to their cognitive and affective processes taking place during an on-going match (Sève, Poizat, Saury, & Durand, 2006). One major finding was that players constantly try to mask the display of negative or exaggerate the same of positive emotions in order to influence the opponent's confidence. By using the same method, this result could be replicated in the study of Sève and colleagues (2007) lending support for the idea, that expression management might be an important component of competitive sports.

The effects of expressive behaviors on the opponent were also examined in several other studies without being explicitly linked to the expression of emotions. For example, in the study of Greenlees, Bradley, Holder, and Thelwell (2005) table tennis players were asked to evaluate their expectancy to beat other players based on videos of them warming up. The results revealed that players' outcome expectancy was significantly lower when the taped players showed dominant body language (erect posture; head and eyes up) compared to submissive body language (slouched posture; head and eyes down). Using a similar design, these findings were replicated in tennis (Greenlees, Buscombe, Thelwell, Holder, & Rimmer, 2005), football (Greenlees, Leyland, Thelwell, & Filby, 2008; Furley, Dicks, & Memmert, 2012), baseball (Furley & Dicks, 2012), and basketball (Furley & Schweizer, 2014) indicating the relevance of expressive behaviors for the opponent's self-efficacy. Concomitant with that, in a qualitative study football players stated

that focusing on the opponents' negative body language could be used as a strategy to trigger their own psychological momentum (Jones & Harwood, 2008).

Intrapersonal consequences

A wealth of research pointing out that contrary to the intuitive way of thinking both negative and positive emotions can either facilitate or debilitate performance (e.g., Hanin, 2010; Ruiz & Hanin, 2011). In the same context, a person-oriented idiographic approach is postulated (Hanin, 2010), whereby each athlete prefers experiencing different emotions during competition. Moreover, evidence in sport settings suggests that emotions might affect performance related constructs like concentration (Martinent & Ferrand, 2009; Vast et al., 2010), confidence, and motivation (Martinent & Ferrand, 2009) and thereby indirectly influence performance.

Going back to the early years of emotion research, it has been proposed that the expression of emotions is not only a consequence of its experience, but also affects the experience itself (James, 1890). This proposed association has been investigated by different approaches in mainstream psychology (e.g., facial feedback hypothesis, Laird, 1974; somatic marker theory; Damasio, 1994) accumulating considerable support for this idea (for a recent review, see Price, Peterson, & Harmon-Jones, 2012). On the one hand, for negative emotions it could be demonstrated that contrary to the idea of a catharsis effect its expression (e.g., by hitting against a pillow) leads rather to an increased than reduced negative emotional experience (Bushman, 2002). On the other hand, a large body of research reveals how for example the facial expressions of joy lead to a higher positive emotional experience (for a review, see Adelmann & Zajonc, 1989).

In contrast to initial attempts investigating the effects of emotional expression on an interpersonal level, to the best of the author's knowledge there are no studies looking explicitly at the effects of emotional expression on oneself in a sport performance context. By cheering after a

goal, Moesch et al. (2015) suggested that players can intensify their experienced emotions whereby its expression works as an internal feedback loop. Following this logic, this might also affect the above mentioned effects on the constructs like concentration, confidence, or motivation. A few qualitative studies using interviews in different team sports revealed some interesting findings, even though they did not directly look at the expression of emotions. For example, the study of Ronglan (2007) indicates how professional handball players intentionally expressed collective joy in order to strengthen their confidence as a team. Similarly, showing enthusiasm after making a point was seen as the main source of collective efficacy in volleyball (Fransen et al., 2012). Finally, handball coaches reported that the players' expression of positive emotions is related to the team's psychological momentum (Moesch & Apitzsch, 2012).

Regulation of emotional expression

Research from different sports indicates that athletes intentionally modulate their emotional expression either to influence their own state (Ronglan, 2007) or the opponent state (Sève et al., 2006; Sève et al., 2007; Ronglan, 2007). Strategies to modulate one's emotional expression come under the term *emotional regulation* (Gross & Thompson, 2007). Even though the prototype of emotion regulation is defined as deliberate and effortful (Koole, 2009), there are also automatic and unconscious types of emotion regulation (Mauss, Bunge, & Gross, 2007). In view of the temporal unfolding of an emotional episode, it is crucial to conceptually separate emotion regulation from emotional sensitivity. While emotional sensitivity refers to its automatic initial response, emotion regulation includes processes seeking 'to override people's spontaneous emotional response' (Koole, 2009). Due to the fact, however, that people often regulate their emotions very fast (Rothermund, Voss, & Wentura, 2008) it appears difficult to unambiguously as-

cribe a visible emotional reaction to the initial automatic response or the (failed) subsequent emotional regulation process.

In accordance with the widely used process model of emotion regulation (Gross, 1998) and several reviews (Gross & Thompson, 2007; Koole, 2009) cognitive and behavioral strategies can be used to up- or down-regulate different components of an emotional response such as the subjective experience, the physiological changes, or the overt expression. Cognitive strategies operate as antecedent-focused processes, whereas behavioral strategies as response-focused processes occur after an emotional response has already been generated (Webb et al., 2012). Looking at the overt expression, cognitive strategies such as changing the emotional significance of a situation (*cognitive change*) or directing the attention away or towards an emotion-eliciting stimulus (*attentional deployment*) exert a rather indirect influence. On the other hand, behavioral strategies such as holding a straight face can directly affect it (*response modulation)*. Although the ability to control one's emotions is considered a crucial mental factor for successful sport performance (Gould & Maynard, 2009), an increasing interest in emotion regulation processes can be witnessed only recently (Uphill et al., 2009). However, to the author's best knowledge, there are no studies explicitly referring to regulation of the expressive components in the sport context.

Determinants of emotional expression

As mentioned before, people react differently in structurally similar situations like winning or losing a point. The expression of an emotion in a specific situation depends on both how strong the initial automatic emotional sensitivity is and to what extent a person is able to use deliberate emotional regulation processes (Koole, 2009). These processes are determined by the

same factors, namely the quality of the emotion-eliciting stimulus, situational factors, and the characteristics of the person encountering the stimulus.

Common sense tells us, that it is more likely to express an emotion with a higher intensity as compared to an emotion with a lower intensity. Based on the idea of a continuously varying core affect some stimuli might trigger greater shifts leading to a more intense emotional episode thereby increasing the likelihood of its expression (Russell, 2009). Research in sport indicates that the emotional intensity depends highly on the individual's interpretation of the event and can be either common among players (e.g., importance of point) or specific to some players (e.g., judgments about opponent's luck) (Sève et al., 2007). The important role of emotional intensity for subsequent emotional regulation is also strongly emphasized by findings suggesting that strategies applied at an earlier stage of the emotion's temporal unfolding are more effective as the emotional intensity is still at a lower level (Gross & Thompson, 2007).

In contrast to significant single events such as winning an important point, situational factors might influence one's core affect in a more subtle way, which, in turn, increases or decreases the inclination to react on certain stimuli. Comparably to the perception of a single emotion-eliciting event the influence of a situational factor is subject to one's interpretation (Lazarus, 2000). In a sport context, these situational factors might reflect on the course of a competition represented for example by the current score configuration or on broader characteristics of the game such as its importance for the season. For instance, Moesch et al. (2015) could evince that handball players celebrated more after scoring in play-off than in league matches. Similarly, Bornstein and Goldschmidt (2008) revealed that football players show more positive emotions after scoring crucial goals in important matches than after scoring irrelevant goals in unimportant matches.

Finally, there are individual differences in how people react to the same kind of emotion-eliciting stimuli. Research could show that individuals differ in both how sensitive they are to emotion-eliciting stimuli and in their ability to regulate emotions (Rothbart & Bates, 2006). In addition, numerous studies demonstrate an age-related improvement in emotion regulation (e.g., Orgeta, 2009; Silvers et al., 2012).

The present study

Albeit the emotion-performance relationship has a long tradition in sport psychology research (e.g., Hanin & Ekkekakis, 2014; Lazarus, 2000), few studies have explicitly investigated the role of emotional expression (Moesch et al., 2015; Moll et al., 2010). Due to the exclusive observational nature of these studies, however, one can only speculate for the reasons behind the players' behavior. Given the finding that table tennis players intentionally modulate the expression of positive and negative emotions (Sève et al., 2006; Sève et al., 2007), the first goal of the present study was to shed more light on the players' motivation of both displaying and hiding their emotions. Based on the evidence of a substantial body of research mainly of mainstream psychology pointing out different strategies to regulate one's emotional experience and expression (e.g., Koole, 2009; Webb et al., 2012) the second goal is investigate how players modulate their expression. Finally, athletes' visible emotional expression can differ significantly between and within individuals. Consequently, the third goal is to establish which factors are related to the expression of emotions.

Research questions:

1) Why do table tennis player modulate their emotional expression?
2) How do table tennis players modulate their expression?

3) What factors influence the expression of emotions?

By addressing the aforementioned shortcomings in emotion research (Sève et al., 2007; Woodman et al., 2009; Uphill et al., 2014), this exploratory study will employ a naturalistic video-assisted approach in a table tennis setting. Based on the valence dimension of core affect (Russell, 2009) we distinguish between negative (e.g., anger, disappointment) and positive (e.g., joy, hope) emotions. Choosing table tennis as the sport setting of investigation appeared suitable since the amount of points entails a lot of possibilities to experience and express emotions. Furthermore, its limited surface area permits taping all actions taking place during the games (Martinent & Ferrand, 2009). Finally, a similar methodological approach has been successfully used in several other studies in table tennis (Sève et al., 2006; Sève et al., 2007; Martinent & Ferrand, 2009).

Methods

Participants

Bearing in mind that gender (Kring & Gordon, 1998) as well as age (Ortega, 2009) are determinants of emotional expression, maximum variation sampling aimed to recruit both females and males within a relatively wide age range (Patton, 1990). Furthermore, we required players to have competitive table tennis experience of at least 10 years. Eventually, seven male and five female players age 22-51 years (M = 28.41 years; SD = 8.30) with an average of 18.3 (SD = 7.28) years of competitive experience agreed to participate in the study.

Procedure

Ethical approval was obtained from the University Ethics Committee. It was decided to collect data by recording matches taking place at the end of the competitive season. By doing so,

we could draw on three different settings which might affect the players' mindset and thereby their emotional expression (Koole, 2009). While five players competed for two teams striving to get promoted to the next higher division, five players of two other teams still risked relegation. Finally, two players participated for one team which was ranked in the middle of the table, with neither a chance for promotion, nor a risk of relegation. Each player was recorded during one match, followed by a self-confrontation interview.

All interviews were conducted by the same author who had extensive training in qualitative research. Several actions were taken to establish rapport and trust between the interviewer and interviewees. First, before the day of the recorded match, every player was met at his/ her sport venue, handed the consent form (Appendix) and informed about the procedure of the study as well as the handling of data, particularly emphasizing its confidentiality. Second, the players could choose a place for the interview allowing for an atmosphere where they felt free to talk (mainly at their homes or at a quite location in the sport venues). Third, the players were ensured that they could leave the interview at any time without justification. Finally, all players expressed great interest to participate in the study.

Data collection

Three probe interviews with other table tennis players using the same methodology were conducted. The aim of which was to make the researcher familiar with the interview process and to train putting aside preconceived assumptions during the actual interviews. The actual data was collected through the use of stimulated recall. Matches of the single players were recorded, followed by self-confrontation interviews (M = 51.88 minutes; SD = 16.10). For the recording of the matches, the camera was positioned diagonally to the corner of the table continuously record-

ing the movement of the players, the umpire, and the scoreboard. Based on existing research suggesting that athletes are able to accurately recall emotions shortly after the previous competition (e.g., Sève et al., 2007; Uphill et al., 2014), the interview took place not later than 36 hours after the match (M = 15.21 hours; SD = 11.93). Additionally, the team agreed to analyze the match only after the interviews in order to avoid potential biases (Sève et al., 2007).

At the beginning of each interview the concepts of emotional experience ('what you feel inside') and emotional expression ('what a person from outside might think you feel') were explained to establish a common understanding. To prevent players from becoming exhausted we decided to preselect ten points from the first and last sets and the set with the tightest result for the interviews. In light of the consistent finding that people tend to better remember the initial as well as the final units of a sequence (e.g., Morrison, Conway, & Chein, 2014) the first four and the last six points of these sets were included in the interview. After each discussed set the player was also asked if he remembered any other emotional situation in the set. For each point, the players first watched the preselected match scene (rally of the point followed by the break until the next service) along with the researcher, who then asked questions concerning their emotional experience and expression based on a semi-structured interview guide (Figure 1). Nevertheless, the interview was allowed flexibility depending on the content of the response (e.g., a player talked about how he or she used to show more emotions). Furthermore, the player could request the researcher to stop or rewind the tape at any time. In one match, only two sets could be recorded due to technical problems with the camera. Here, the first seven and the last eight points of these sets were discussed in the interview. Six players won and six players lost the recorded match. Furthermore, the interviews referred to 18 won and 17 lost sets.

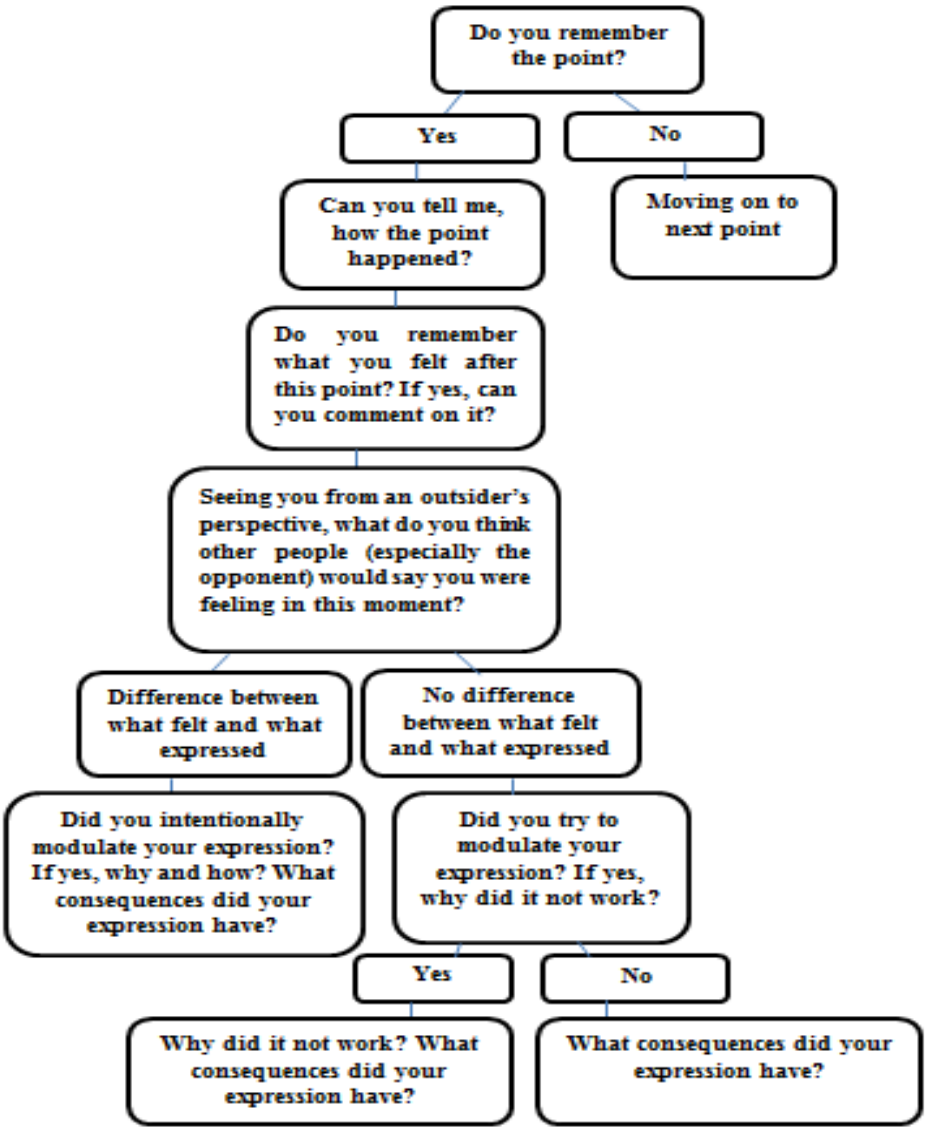

Figure 1 - Interview guide

Data Analysis

Due to the exploratory nature of the study, a content analysis appeared to be the most appropriate methodological approach to analyze the verbatim transcribed interviews (Green & Thorogood, 2004). A deductive approach was employed using the three research questions as broad categories (Elo & Kyngäs, 2008). Within these broad categories, however, subcategories

and further themes were created and defined following the principles of an inductive content analysis (Elo & Kyngäs, 2008). Elementary units of meaning (EUMs) that represented the participant's experience (Strauss & Corbin, 1998) and were relevant to the research questions included single words, sentences, and more complete paragraphs. In case of content ambiguity of the interview, single sequences of the videotape were reviewed while transcribing. Finally, the translations of the quotes from German to English were reviewed by a bilingual PhD candidate in sport and exercise psychology.

Results

The results are depicted in three sections in relation to the motivation behind expression modulation, the mechanisms of expression modulation, and factors influencing emotional expression. The Figures 2, 3, and 4 give overviews of the subcategories which were developed in the analysis with regards to the three research questions. In total, from 115 (per match: M = 9.*58;* SD = 4.1) points won and 126 (per match: M = 10.5; SD = 3) points lost, 734 EUMs were extracted.

Why do table tennis players modulate their emotional expression?

Results concerning the motivation behind modulating one's emotional expression are based on EUMs reflecting on either directly concrete reasons or the perceived consequences of having expressed emotions. In total, 186 EUMs could be retrieved, from which 137 directly refer to the analyzed match. Moreover, in 21 occurrences two or more EUMs were named in the context of the same match sequence. For both positive and negative emotions, the results are classified into the three subcategories of *Adversarial Relationship*, *Self-related*, and the *Social Situation* (Figure 2).

Adversarial Relationship (69 EUMs). All except one player reported either hiding negative emotions to prevent boosting or expressing positive emotions to decrease the opponent's self-confidence. In the same vein, hiding negative emotions as well as expressing positive emotions are viewed to be an inherent part of presenting oneself as a strong and confident player. As two players highlighted, 'When you realize, the opponent slouches and starts complaining, this can be internally encouraging…even, if you don't perceive this consciously, but more things work out…since you are simply more confident...' (Female, 23); 'It was important to keep up with him…that's why I showed him, 'I'm still there' and 'that's not your game!'' (Male, 22). After winning a lucky point, however, one player reported not showing positive emotions[2] since it would only reveal his own weakness. Furthermore, expressing emotions was related to the opponent's capability to remember certain strokes. On the one hand, expressed negative emotions would reveal one's weaknesses, encouraging the opponent to repeat this stroke. On the other hand, one player mentioned not expressing positive emotions after playing a tricky shot, so that the opponent would not remember how the shot was played. Finally, for five players manifested positive emotions were also associated with an increased motivation of the opponent. For example, one player (Male, 26) stated: 'If you play against a very good player and you cheer yourself on all the time…after a while, they will also start to push themselves more…and then they will destroy you'. In line with this, one player even asserted sometimes purposefully displaying negative emotions in an attempt to undermine the opponent's motivation.

Self-related (95 EUMs). All players related the expression of negative emotions to an intensified experience of the emotion itself. In this regard, expressing negative emotions would

[2]As it will be elaborated in the discussion, it is not always clear to what extent the expression of a positive emotion is suppressed or simply not displayed in such situations.

cause a player to work him- or herself up into the emotion, to become more nervous, and/ or to dwell on the situation. Furthermore, many players also emphasized the role of concentration: 'In fact, I try putting my energy into concentrating. It's not that I don't want to show it to her, but I have to stay focused' (Female, 30 years). Interestingly, however, for two players expressing negative emotions can sometimes help them to stay motivated. The expression of positive emotions was more often associated with facilitative effects, whereby six players particularly related it to their own confidence: 'There I psych myself up. It was a relief and also a good point, which I played. This definitely increases my self-confidence in such a situation.' (Female, 30). It was also emphasized by one player how expressing positive emotions can increase your motivation or help you to remember a good shot. Nevertheless, for eight players in other situations expressing positive emotions was correlated to a decreased concentration: 'I don't calm down again, since I keep pushing more and more and I start to lose control.'(Female, 25). One player stated how expressing positive emotions might even make one more nervous. Moreover, the expression of negative as well as of positive emotions was sometimes viewed as a release of pressure, which could lead to an increased concentration afterwards. Finally, two players stated how expressing both positive and negative emotions can result in tiredness: '…and, if I did anything physical to the outside, then I would only lose power. It wouldn't help me at all.' (Female, 51).

Social Situation (22 EUMs). Players also related their emotional expression to the sport competition as a social situation per se, but to a lesser extent. It is noteworthy, that in this context players only reported suppressing/ not displaying both positive and negative emotions. In case of winning a point due to the ball hitting the net or the edge of the table, seven players stated not revealing positive emotions. As one player (Male, 33) illustrated: 'Sure, you apologize, but you are glad…yes, you are relieved, but you can't show it to the outside.' Nevertheless, one player

mentioned after surprisingly winning an important match against an opponent deemed strong, that she could not suppress her joy although the opponent hit the net with the last stroke. Another player stated that playing in front of a large audience can make it more difficult to not show positive emotions in such situations. In addition, the expression of positive and negative emotions is suppressed in some situations to avoid a bad atmosphere in the game. Two players also mentioned not displaying positive emotions even after winning the game to prevent the opponent to feel worse after his or her defeat. Finally, players mentioned possible consequences for oneself in the social context. Besides avoiding a punishment from the referee, few players also related their suppression of negative or non-display of positive emotions to one's social self-presentation. For instance, one player (Male, 35) reported: 'sometimes I also think 'man, you have to be realistic'. If you started jumping for joy, then other people would think, that you think you could win this game'.

1) Adversarial Relationship

Opponent's confidence:
11 N- 'This would be encouraging for the opponent.'
6 P+ 'This is discouraging for the opponent.'
Self-presentation:
7 N- 'It is important to come across as confident.'
5 P+ 'To show him, I'm there.'
1 P- 'Expressing it would only communicate weakness.'
Opponent's motivation:
5 P- 'I'd also push the opponent.'
1 N+ 'The opponent might take me less seriously.'
Opponent's memory:
3 N- 'The opponent would rather do this stroke again.'
1 P- 'The opponent wouldn't forget my stroke.'

2) Self-related

Emotion experience
12 N- 'I would just get more worked up.'
1 P- 'I think I would get more nervous.'
Concentration
10 N- 'I want to stay focused.'
9 P- 'I would lose concentration.'
Confidence
6 P+ 'It definitely increases my confidence then'
Venting out
3 N+ 'I need to let it out.'
2 P+ 'It helps to release the pressure.'
Physical state
2 P- 'It would be too tiring for me to celebrate my points all the time."
2 N- 'I would just lose power which I need for the game.'
Motivation
2 N+ 'Sometimes I even look to pick an argument.'
1 P+ 'I'm even more motivated to win afterwards.'
Memory
1 P+ 'So I remember the shot better.'

3) Social Situation

Unwritten rule
7 P- 'You just can't show it in these situations.'
Social self-Presentation
2 P- 'This would appear strange.'
2 N- 'I don't want to appear as an antisocial player.'
Atmosphere
1 N- 'I will meet the person again.'
1 P- 'I don't want a toxic game.'
Respecting opponent
2 P- 'I know how the opponent feels.'
Punishment
1 N- 'I would get a yellow card.'

Figure 2 - Players' motivation behind expression modulation. The numbers indicate by how many participants a subcategory was mentioned at least once. The letters denote if modulation refers to positive (P) and/ or negative (N) emotions. The symbols indicate if motivation refers to expressing (+) and/ or (-) suppressing/ not showing emotion.

How do table tennis players modulate their expression?

163 EUMs were extracted with respect to the modulation of emotional expression, from which 141 pertain directly to the analyzed matches. The results can be sorted into the three sub-categories *Negative Emotions-Suppression*, *Positive Emotions-Display*, and *Positive Emotions-Suppressions* (Figure 3).

Negative Emotions-Suppression (98 EUMs). Players reported using a wide range of cognitive strategies indirectly suppressing the expression of negative emotions. Here, ten players mentioned at least once to direct one's attention somewhere else, eight to reframe the situation, five to analyze one's mistake, and four to use self-talk to calm down. Furthermore, many different behavioral strategies embracing mainly the active look for support to one's teammates (four players), turning around (four players), controlled breathing (four players), and grinning (two players) were used. For 22 match sequences the occurrence of at least two strategies was reported, including the combination of different cognitive or cognitive and behavioral strategies. Here, one player said 'I turned around….and I thought 'No…stay calm'' (Male, 26). Interestingly, three players even reported to explicitly practice how to cope with negative emotions.

Positive Emotions-Display (58 EUMs). The mostly mentioned ways to display positive emotions were making a fist (ten players) and exerting vocal expressions (seven players). Moreover, its expression was also stated through facial expressions (one player) or a specific body language (one player). Furthermore, for ten match sequences the occurrence of two strategies was mentioned. As one player said: 'There the fist comes immediately…and then I also said 'tcho!'' (Female, 25). Nevertheless, it has to be noted that in seven occurrences its automatic expression was emphasized (five players). To illustrate, one player (Male, 26) reported after making a fist: 'You do it consciously automatic…I would say both…'

Suppression

a) Cognitive

28 N, **4 P** Attention change
'Focus on the next point!'
21 N Reframing
'It doesn't matter, I still can catch up.'
9 N Analysis of mistake
'I'm thinking about what I can do better the next time.'
7 N, **1 P** Self-talk to calm down
'Pull yourself together!'

b) Behavioral

7 N Looking for support
'I was looking at my teammates to get confirmation.'
5 N Turning around
'I turned around, so the opponent couldn't see my anger.'
5 N Controlled breathing
'I exhaled deeply.'
4 N Grinning
'If I grin, everything is still ok!'
1 N, **1 P** Looking away
'I looked at my racket.'

Expression

a) Behavioral

32 P Making a fist
'The fist comes directly.'
17 P Vocal expressions
'I shouted out of joy.'

Figure 3 – Players' strategies to modulate emotional expression. Themes are included if mentioned at least by two players. The numbers indicate how many times a theme was mentioned. For the subcategory suppression, the letters denote if strategies refer to negative (N) or positive (P) emotions. The subcategory expression exclusively refers to the modulation of positive emotions

Positive Emotions-Suppression (7 EUMs). The most mentioned way to suppress the expression of positive emotion was direct one's attention to something else (three players). Besides, it was mentioned to deeply breathe (one player) or to use self-talk to calm down (one player). In one case directing attention was accompanied by looking at one's racket: 'I'm happy in that moment, but I think to myself 'keep playing'…'keep focused' and always rather look at the floor, at the table, or at my racket instead of looking at all the people cheering' (Female, 23).

What factors influence the expression of emotions?

In total 385 EUMs were retrieved in relation to factors influencing whether an emotion was expressed or not, of which 313 directly refer to the analyzed matches. The EUMs pertain to situations where players reported at least to some degree a positive or negative emotional experience. The analysis revealed the four subcategories *Intensity of Emotional Experience, Perception of the Point Won or Lost, Situational Factors,* and *Personal Factors* (Figure 4). In 59 cases, two or more EUMs including different combinations of the four subcategories were mentioned for the same match sequence.

Intensity of Emotional Experience (54 EUMs). In total ten players referred at least once to the emotional intensity experienced in a specific situation explaining why one does or does not express an emotion. While a strong intensity was related to expressed, a weak intensity was related to unexpressed emotions, both positive and negative. As one player (Male, 27) illustrated: 'I experienced a little bit of joy, but it didn't reach the threshold…if you can call it that…that I'd express that joy…the feeling wasn't strong enough.'

Perception of the Point Won or Lost (95 EUMs). All except one player related their (lack of) expression of an emotion at least once to one's perception of the point won or lost. Negative emotions were expressed if one made a mistake (ten players), if one initially thought during the rally one could win this point (four players), or if one played a ball different to one's planned strategy (two players). For example, one player (Male, 22) stated: 'When I do such a rookie mistake, then I have my head down and close my eyes.' On the contrary, in situations when the lost point was perceived as a simple ball (one player) or as well played by the opponent (two players) negative emotions were not expressed. Interestingly, the perception that one's own bad luck was responsible for a point lost could explain that negative emotions were either ex-

pressed (three players) or not (one player). Positive emotions were expressed if one played a nice ball (five players), if one played as intended (four players), or if one did not expect to win the point during the rally (four players). As an illustration: 'I was so happy, that I shouted loudly 'tcho' and made a fist. I was so delighted about myself…that I did in this tight situation such a ball, which she did not expect at all.' (Female, 25). Similar to negative emotions, a positive emotion was not expressed if one perceives a ball as not special (five players).

Situational Factors (188 EUMs). For both positive and negative emotions situational factors can be classified into two further subcategories of *Mental State* and *External Features of the Situation*. The subcategory Mental State includes mainly different thoughts and feelings experienced in specific situations during the game. To elaborate, negative emotions were expressed in situations where one is generally unhappy with the performance in that match (five players) or discerns a general uncertainty in one's game (two players). For instance, one player (Female, 23) reported: 'I realize it isn't going well. Things, which I can normally do, just don't work out…then I get really upset.' In situations where a player experiences worries of losing (four players) or feels a lot of pressure to win (two players), players reported showing both negative and positive emotions. Moreover, being committed to the game was related to the expression of positive emotions (three players). Players reported not expressing negative or positive emotions in situations when they are already mentally disconnected from the set /game (seven players). Interestingly, this happens in both situations either being certain about one's victory or accepting one's defeat. Opposite to that, another player stated expressing more emotions in such situations caused by a decreased body tension. In the same vein, the general perception of being the better player can have different consequences. For some players it explained why they showed negative (two players) as well as positive emotions (one player). Conversely, two different players report-

ed showing less negative emotions perceiving it this way. Finally, having thoughts with regards to one's tactic was associated with not expressing positive emotions (three players). To illustrate, one player (Female, 23) reported: 'If I score a point, you almost never see me celebrate or anything like that…I rather think 'that's how you can score a point against her'…things like that'.

The External Features of the Situation refer mainly to circumstances of the ongoing match and to broader situational attributes of the game. Different characteristics of several features exert opposing effects on the expression of both positive and negative emotions. While in more unimportant match scenes (mainly the beginning of a game/ set) less negative as well as positive emotions were shown, players related their expression of emotions to important match scenes (12 players). As an illustration, one player (Female, 51) explained why she made a fist fending a match point: 'Probably because if I had not won this point, I would have lost the match…and probably you can see it at 10 10 again, right?' Similarly, in important matches players reported to show more and in unimportant matches less negative and positive emotions (five players). Moreover, leading comfortably was related to not expressing negative as well as positive emotions. On the contrary, trailing was related to expressing negative emotions (five players). Concerning negative emotions, a general bad course of the match (six players) as well as losing consecutive points (six players) were linked with its expression. Interestingly, having had a bad run before scoring again explained the expression of positive emotions (five players). For example, one player (Male, 27) noted after making a fist: 'I felt stronger again…I thought that the bad run from before was over and my backhand works again.' Playing against a good opponent was associated with expressing (two players) and playing against a bad opponent (two players) with not expressing positive emotions. Furthermore, the opponent's expression of emotions or unfair behavior (four players) just as playing for a new contract/ money (two players) were

related to expressing positive and negative emotions. Finally, two players associated their expression of negative emotions with the stress they experienced somewhere else before (e.g., at work).

Personal Factors (48 EUMs). For both positive and negative emotions, players related their expression to one's personality and age. To elaborate, players justified their expression or the lack of it with their personality. As one player (Female, 51) stated: 'I'm not known as someone who shows anything to others.' Remarkably, from the seven players indicating that they usually do not show a lot of negative emotions, five players also emphasized that they do not show as much positive emotions compared to others. In contrast to that, only one player revealed that he has troubles hiding his negative emotions. In addition, six players mentioned expressing less negative emotions compared to when they were younger. In this regard, three players highlighted the role of learning from experience: 'When I was younger, I also threw my racket quite often…but from this I learnt to lose… it's okay to lose, that's what you learn…that's a learning process.' (Male, 22). Finally, two players stated to now show less positive emotions, whereby one of them emphasized the role of experience again.

1) Intensity of Emotion Experience

26 N+, **11 P+** High intensity
'I was too angry.'
13 N-, **4 P-** Low intensity
'The feeling wasn't strong enough.'

2) Perception of the Point Won or Lost

35 N+ Own mistake
'Such a rookie mistake always upsets me.'
20 P+ Nice point
'When I do such a stroke, I'm proud of myself.'
9 P+ Point not expected
'I didn't think I would win this point.'
6 P-, **2 N-** Simple ball
'It was just an easy point.'
7 N+ Hope during the rally
'I started the rally so good.'
5 N+, **1 N-** Own bad luck
'And then the ball hits the damn net.'
5 P+ Played like planned
'I really like it if my plans work out.'
3 N+ Played unlike planned
'I had something else in my mind.'
2 N- Good point by the opponent
'It was really well played by the opponent.'

3) Situational Factors

a) **Mental State**

9 N+ Unhappy with own performance
'I had a very bad day today.'
8 P-, **6 N-**, **2 N+** Disconnection from set/ game
'I gave up on this set.'
8 N+, 1 P+ Worries of losing
'I started thinking, I would lose the match.'
5 P- Tactical thoughts
'I should do such a stroke more often.'
3 N-, **3 N+**, **1 P+** Perceiving oneself as the better player
'I had to win against this player.'
3 P+ Commitment to game
'I was really in the game.'
3 N+ Uncertain about own game
'I lost the certainty of doing these strokes.'
1 P+, **1 N+** Feeling pressure
'You always perceive some kind of pressure.'

Figure 4 - Factors influencing the expression of positive and negative emotions. For the subcategory situational factors only the themes mentioned at least by two players are included. The numbers indicate how many times a theme was mentioned. Capitals denote if modulation refers to (**P**) positive and/ or (**N**) negative emotions. Symbols indicate if factor was linked to (+) expressing or (-) not expressing an emotion.

b) External Features of the Situation

22 P+, **17 N+** Important match scene
'It was 9 10, so I had to win this point.'
14 N-, **10 P-** Unimportant match scene
'You don't see so much at the beginning of the set.'
12 N+ Consecutive points lost
'It upsets me, if I lose these points three times in a row.'
10 N-, **4 P-** Current score (leading)
'It was 2 0 in the sets for me, so everything was ok.'
8 P+ Bad run before
'I finally won a point again.'
7 N+ General bad course of the match
'Everything went against me.'
4 N+ Current score (trailing)
'I was already behind in the sets.'
4 P+, **3 N+** Behavior of opponent
'If someone provokes me, then I always show more.'
4 P- Playing against bad opponent
'I was expected to win against him.'
3 N+, **1 P+** Important game
'I really had to win this game.'
3 N+ Stress somewhere else
'When I have stress at work, you see me nagging sometimes.'
2 P+ Playing against good opponent
'You see me showing it, when I play against good opponents.'
2 N+, **1 P+** Playing for new contract/ money
'Since I'm playing for a new contract, I approach such a match with a totally different tension.'
2 N-, **1 P-** Unimportant game
'You should have come in the first half of the season. Now, nothing is at stake.'

4) **Personal Factors**

13 P-, **12 N-**, **8 N+** Personality
'I'm known to not show a lot.'
7 N- Age
'As a child, I showed much more.'
5 N-, **3 P-** Experience
'I learnt that expressing it doesn't help me.'

Figure 4 (continued)

Discussion

In the following sections, the results are discussed with regards to the motivation of the table tennis players to modulate their emotional expression, the reported strategies of modulation, and factors influencing the emotional expression.

Motivation behind expression modulation

In accordance with the assumption that opponents constantly judge each other's internal state (Greenlees, 2007), expression modulation bears heavily on its perceived influence on the opponent. Taking the strong and consistent relationship between self-confidence and sport performance into account (Craft, Magyar, Becker, & Feltz, 2003) and in line with previous research (Sève et al., 2006; Sève et al., 2007; Ronglan, 2007) , it is not surprising that the main target is thereby the opponent's self-confidence. A plausible logic behind it is that while showing negative emotions might communicate doubts about the ultimate success, positive emotions transmit faith in one's own strength and, in turn, entail the respectively opposing effects on the opponent. In light of consistent results indicating that the expressive behaviors might actually influence the opponent's self-efficacy (Greenlees et al., 2005; Greenlees et al., 2005; Greenlees et al., 2008; Furley et al., 2012; Furley & Dicks, 2012; Furley & Schweizer, 2014) the expression of emotions can, similar to self-talk that is spoken out loud (van Raalte et al., 2006), be an effective tool in the competitive interaction in sports. Importantly, in addition to the findings of Sève and colleagues (2006; 2007) several players reported purposefully not showing positive or in one case even displaying negative emotions trying to not boost or to undermine the opponent's motivation. Furthermore, few players related their non-expression to the opponent's ability to remember a certain stroke. In keeping with findings from mainstream psychology indicating that emotional

content can be better remembered (Bechara, Damasio, & Damasio, 2000), this assumption might be based on the belief, that expressing one's own emotions implies making the situation more emotional for the opponent as well.

In addition to the assumed effects on the opponent as part of the adversarial relationship, the modulation of emotional expression targets oneself to a more or less equal extent. Extending the idea suggested by Moesch et al. (2015) that expressing positive emotions might augment the experience of the emotion itself, the players' statements indicate further effects on the consequences of experienced emotions. In accordance with previous studies showing that positive emotions can enhance the player's confidence and motivation (Martinent & Ferrand, 2009), expressing these emotions might cultivate these processes. To elaborate, strategies used in team sports aiming to enhance the collective confidence (Ronglan, 2007; Fransen et al., 2012) appear to also work on an individual level. Consequently, expressing positive emotions can have similar effects as dominant behaviors not only to undermine the opponent's confidence (e.g., Greenlees et al., 2005) but also to enhance one's own feelings of power (Carney, Cuddy, & Yap, 2010). Nevertheless, many players stated to refrain sometimes from expressing positive emotions due to its impairing effect on one's concentration. Given that the experience of positive emotions is sometimes associated with decreased concentration (Martinent & Ferrand, 2009) expressing positive emotions might not only intensify its facilitative, but also its debilitative effects. Interestingly, the assumed effect of augmenting the experience of an emotion (Moesch et al., 2015) is not limited to positive emotions. In line with research from mainstream psychology (Bushman, 2002), the results indicate that expressing negative emotions would mostly cause the players to become even more worked up. Consequently, instead of letting the negative energy out, the concentration impairing effects of the emotion (Martinent & Ferrand, 2009; Vast et al., 2010) could

become even worse. However, the findings suggest that in situations when the intensity of emotional experience becomes too big (e.g., because of losing consecutively by doing a mistake) for some players it might be helpful to vent out once to reduce the tension and regain concentration. In the same vein, expressing negative emotions was also seen as motivating sometimes. Taking into consideration, that the experience of negative emotions is sometimes viewed as motivating (Martinent & Ferrand, 2009), expressing it might again entail an enhancing effect.

Lastly, the modulation of emotional expression does not only aim to increase the chances of winning, but also regards its consequences in the social context. In light of the results indicating that vocal expressions are a frequent way to express positive as well as negative emotions, this is in line with van Raalte et al. (2006) postulating that aloud self-talk might be used to present oneself in a socially favorable manner. It is noteworthy that in our study, however, social reasons were exclusively related to suppressing emotions. Despite the competitive nature of most sports often so called 'unwritten rules' exist in order to establish a fair social interaction between the opponents. In table tennis, one of the main unwritten rules is thereby to not express positive emotions in case you win a point by touching the net or the edge of the table. The statements of some players that under certain circumstances (e.g., winning the last point or playing in front of a large audience) it is difficult to suppress showing the inner joy hint how these rules might be overridden by the emotional intensity or situational factors. In this regard, it seems worthwhile to examine if these unwritten rules are also consistently followed by players competing at a higher level. In the same vein, other reported motives like avoiding a bad atmosphere might also be less prevalent in contexts where the stakes are high.

Strategies to modulate emotional expression

It is obvious that the frequently mentioned cognitive strategies to explicitly regulate the emotional expression such as attention change and reframing exhibit a huge overlap with strategies commonly postulated to regulate one's emotions (Gross & Thompson, 2007; Koole, 2009). Although the theme analysis of mistake could also be classified under the mechanism of reframing, the stated frequency justifies its existence as a separate theme. Research from mainstream psychology (Gross & Thompson, 2007; Webb et al., 2012) suggests that such cognitive strategies operate at an earlier stage of an emotional episode, where the experienced intensity is still at a lower level. Consequently, these strategies can help the players to prevent the emotional experience to become more intense and thereby indirectly avoid its expression. Conversely, behavioral strategies might be employed when players are not able to draw on cognitive strategies beforehand or their attempts to use these have failed. Hence, turning around or looking at teammates only aims to prevent the opponent from seeing one's emotional reaction and does not aid in suppressing the expression itself. In light of research indicating that behavioral strategies are less successful to reduce the actual experience of the emotion (Webb et al., 2012), players might be advised to employ cognitive strategies. However, due to findings highlighting how certain expressions might affect the emotional experience as well (Price et al., 2012), behavioral strategies such as grinning or controlled breathing appear to complement cognitive strategies. For instance, grinning might be useful to help reframing a situation or controlled breathing might accompany the use of self-talk to calm down. In this regard, the finding that different strategies are often mentioned for the same match sequence (e.g., grinning and telling yourself 'it's okay') corresponds to the findings of Uphill, Lane, and Jones (2012) showing that regulation strategies should not be viewed in isolation in the sport domain.

Given that many players emphasized how the expression of positive emotions might have negative consequences it is not surprising that in a few situations players even stated to actively suppress the expression of positive emotions. Besides, in other situations it is not always clear to what extent positive emotions are simply not displayed or even unconsciously suppressed. For example, tactical thoughts (e.g., 'I should use such a tactic more often.') in situations when players do not show positive emotions might unconsciously be used to suppress its expression. Moreover, looking at the expression of positive emotions, it is not always clear if an expressed emotion is actually due to the deliberate modulation displaying its expression or rather the outcome of an automatic response. In light of the fact that the actual emotional expression depends on both a primary automatic response and secondary deliberate emotion regulation strategies (Koole, 2009), it is not surprising that several players highlighted their automatic emotional expression.

Determinants of emotional expression

In accordance with Koole (2009) the players stated a wide range of possible factors which affect if or not an emotion is expressed. It is difficult to say, however, to what extent these factors influence the inclination to automatically react to an emotion-eliciting stimulus or determine the ability to regulate one's emotional expression. A possible explanation for the overt reaction could be the person's core affect whose fluctuation is simultaneously influenced by multiple factors (Russell, 2009). To elaborate, a highly aroused state of core affect experienced either as positive or negative might increase the likelihood of expressing an emotion. By ascribing their emotional expression to the high intensity of an emotion, players might directly refer to the intense change in core affect. On the one hand, such single intense shifts could be caused by perceptions of single points like making an unforced error in case of losing or having played a very

nice ball in case of winning. On the other hand, situational factors might lead players to slowly get into a more or a less intense state of core affect than before. This, in turn, might change their susceptibly to react on emotion-eliciting stimuli. This change can be triggered by several factors in the ongoing match (e.g., losing consecutively a ball), but also by broader factors (e.g., importance of the match) leading to a different way of approaching the match. In fact, even having stress at work might already cause one to start a match with a certain state in the core affect increasing the likelihood of expressing emotions. Interestingly, many of the reported situational factors are related to the expression of both positive and negative emotions highlighting the role of arousal. Furthermore, individual differences such as one's personality or also the age might be due to the general reactivity in one's core affect.

The different factors appear to interactively reinforce as well as compensate each other in their effects on emotional expression. For example, by being behind in the sets and losing a point at the end of a set by making a simple mistake might make it difficult to withhold one's emotional reaction. On the other hand, by leading by two sets in the same situation one might experience fewer difficulties doing it. The role of interpretation also appears to be of high relevance here (Lazarus, 2000). Losing a point since the ball hits the edge of the table can lead to different interpretations and thereby emotional expressions. While some players emphasized that one has to accept these points, other players complained about their own bad luck. In this context, learning how to interpret the same situations differently might help to modify one's emotional expression in a more favorable way.

Recommendations for future research

This study highlights the importance to explicitly investigate the role of emotional expression in the sport context. In contrast to observational studies quantifying different celebrations after scoring in team sports and their impact on objective performance measures (Moesch et al., 2015; Moll et al., 2010), the present qualitative study was based on the subjective experience trying to explain one's behavior. In this regard, quantitative and qualitative methods could complementarily shed more light into how and why emotional expression might influence the performance. Given that almost all players assume to influence the opponent by their emotional expression it appears worthwhile to also examine the opponent's perception. Naturally, the findings are of high relevance from an applied perspective. Here, future research should explicitly focus how expression management cannot only influence the opponent but even more, how it could facilitate one's own performance. It appears promising to teach players different strategies to modulate the expression of negative and positive emotions which might implicitly also regulate the emotional experience. Furthermore, the role of emotional expression should be investigated across different types of sport. For instance, in team sports emotional expression was shown to be used to influence the teammates (Tamminen & Crocker, 2013). Finally, the constructional framework of emotions might be particularly applicable in the sport context (Latinjak, 2012) explaining inter- und intraindividual differences in emotional experience and expression.

Limitations

Although using a naturalistic qualitative video-assisted approach allowed us to examine a wide range of emotions during a sport competition overcoming thereby some central points of criticism related to emotion research in the sport context (Sève et al., 2007; Woodman et al.,

2009; Uphill et al., 2014), the present study is naturally not free of limitations. First, the players' memory could be biased by watching his or her reaction on the video first. In this regard, it is questionable that all players' answers in the interviews reflected on conscious thoughts in the specific match situations but might rather be based on general beliefs and experiences. Second, even though players were asked to assess their emotional expression as objectively as possible, the answers are still based on their subjective impression. Third, the preselection of points might have prevented the confrontation of players with various kinds of situations in the interview. For instance, it appears plausible that all players would have stated not showing positive emotions after winning a point since the ball hit the edge of the table, if they all had been confronted with such a scene in the interview. Finally, drawing from statements relating to a higher experience and expression of emotions among several players in the current study when they had previously competed at higher levels, it could be concluded that a sample with more professional players might bring up different results.

References

Adelmann, P. K., & Zajonc, R. (1989). Facial efference and the experience of emotion. *Annual Review of Psychology, 40,* 249-280.

Bachorowski, J.-A., & Owren, M. J. (2008). Vocal expressions of emotion. M. Lewis, J.M. Haviland-Jones, & L.F. Barrett (Eds.), *The handbook of emotion*, (3rd Ed., pp. 196-210). New York: Guilford.

Barrett, L.F. (2009). Variety is the spice of life: A psychological approach to understanding variability in emotion. *Cognition and Emotion, 23(7),* 1284-1306.

Bechara, A., Damasio, H., & Damasio, A.R. (2000). Emotion, decision making and the orbitofrontal cortex. *Cerebral Cortex, 10,* 295-307.

Bornstein, G., & Goldschmidt, C. (2008). Post-scoring behaviour and team success in football. In P. Andersson, P. Ayton, & C. Schmidt (Eds.), *Myths and facts about football: The economics and psychology of the world's greatest sport* (pp. 113–123). Newcastle upon Tyne, UK: Cambridge Scholars.

Bushman, B.J. (2002). Does venting anger feed or extinguish the flame? Catharsis, rumination, distraction, anger, and aggressive responding. *Personality and Social Psychology Bulletin, 28(6),* 724-731.

Carney, D.R., Cuddy, A.J.C., & Yap, A.J. (2010). Power Posing: Brief nonverbal display affect neuroendocrine levels and risk tolerance. *Psychological Science, 21 (10),* 1363-1368.

Craft, L.L., Magyar, T.M., Becker, B.J., & Feltz, D.L. (2003). The relationship between the Competitive State Anxiety Inventory-2 and sport performance: a meta-analysis. *Journal of Sport and Exercise Psychology, 25*, 44–65.

Crivelli, C., Carrera, P., & Fernandez-Dols, J-M. (2015). Are smiles a sign of happiness? Spontaneous expressions of judo winners. *Evolution and human behavior, 36,* 52-58.

Dael, N., Mortillaro, M., & Scherer, K.R. (2012). Emotion expression in body action and posture. *Emotion, 12(5),* 1085-1011.

Damasio, A. R. (1994). *Descartes' error. Emotion, reason, and the human*. New York, NY: Putnam.

Elo, S., & Kyngäs, H. (2008). The qualitative content analysis process. *Journal of Advanced Nursing, 62,* 107-115.

Fiske, S. T., & Taylor, S. E. (1991). *Social cognition*. Reading, MA: Addison-Wesley.

Fransen, K., Vanbeselaere, N., Exadaktylos, V., Vande Broek, G., De Cuyper, B., Berckmans, D., Ceux, T., De Backer, M., & Boen, F. (2012). "Yes, we can!": Perceptions of collective efficacy sources in volleyball. *Journal of Sports Sciences, 30*, 641–649.

Furley, P., & Dicks, M. (2012). "Hold your head high." The influence of emotional versus neutral nonverbal expressions of dominance and submissiveness in baseball. *International Journal of Sport Psychology, 43*, 294–311.

Furley, P., Dicks, M., & Memmert, D. (2012). Nonverbal behavior in soccer: The influence of dominant and submissive body language on the impression formation and expectancy of success of soccer players. *Journal of Sport and Exercise Psychology, 34*, 61–82.

Furley, P., & Schweizer, G. (2014). "I'm pretty sure that we will win!": the influence of score-related nonverbal behavioral changes on the confidence in winning a basketball game. *Journal of Sport and Exercise Psychology, 36,* 316-320.

Gould, D., & Maynard, I. (2009). Psychological preparation for the Olympic Games. *Journal of Sports Sciences, 27,* 1393-1408.

Green, J., & Thorogood, N. (2004). Analysing qualitative data. In D. Silverman (Ed.), *Qualitative Methods for Health research* (pp. 173-200). London: Sage Publications.

Greenlees, I., Bradley, A., Holder, T., & Thelwell, R. (2005). The impact of opponents' non-verbal behaviour on the first impressions and outcome expectations of table-tennis players. *Psychology of Sport and Exercise, 6,* 103–115.

Greenlees, I., Buscombe, R., Thelwell, R., Holder, T., & Rimmer, M. (2005). Impact of opponents' clothing and body language on impression formation and outcome expectations. *Journal of Sport and Exercise Psychology, 27,* 39–52.

Greenlees, I. A. (2007). Person perception in sport. In S. Jowett & D. Lavallee (Eds.), *Social psychology of sport* (pp. 195-208). Champaign, IL: Human Kinetics.

Greenlees, I. A., Leyland, A., Thelwell, R. C., & Filby, W. (2008). Soccer penalty takers' uniform colour and pre-penalty kick gaze affect the impressions formed of them by opposing goalkeepers. *Journal of Sports Sciences, 26*, 569–576.

Gross, J.J. (1998). The emerging field of emotion regulation: An integrative review. *Review of General Psychology, 2*, 271-299.

Gross, J.J., & Thompson, R.A. (2007). Emotion regulation: Conceptual foundations. In J.J. Gross (Ed.), *Handbook of emotion regulation* (pp. 3-24). New York: Guilford Press.

Gross, J.J. & Barrett, L.F. (2011). Emotion generation and emotion regulation: One or two depends on your point of view. *Emotion Review, 3,* 8-16.

Gross, J.J. (2015). Emotion regulation: Current status and future prospects. *Psychological Inquiry, 26,* 1-26.

Hanin, Y. L. (2010). Coping with anxiety in sport. In A. R. Nicholls (Ed.), *Coping in sport: Theory, methods, and related constructs* (pp. 159-175). Hauppauge, NY: Nova Science.

Hanin, Y.L., & Ekkekakis, P. (2014). Emotions in and exercise settings. In A.G. Papaioannou & D. Hackfort (Eds.), *Routledge Companion to Sport and Exercise Psychology: Global Perspectives and Fundamental Concepts* (pp. 83-104). London: Routledge.

James, W. (1890). *The Principles of Psychology.* New York: Dover.

Jones, M., & Harwood, C. (2008). Psychological momentum within competitive soccer: Players' perspectives. *Journal of Applied Sport Psychology, 20,* 57–72.

Koole, S. (2009). The psychology of emotion regulation: An integrative review. *Cognition and Emotion, 23,* 4 – 41.

Kring, A.M., & Gordon, A.H. (1998). Sex differences in emotion: expression, experience, and physiology. *Journal of Personality and Social Psychology, 74 (3),* 686-703.

Laird, J. D. (1974). Self-attribution of emotion: The effects of expressive behavior on the quality of emotional experience. *Journal of Personality and Social Psychology, 29,* 475- 486.

Latinjak, A.T. (2012). The underlying structure of emotions: A tri-dimensional model of core affect and emotion concepts for sports. *Revista Iberoamericana de Psiologia del ejercicio y el deporte, 7,* 71-87.

Lazarus, R.S. (2000). How emotions influence performance in competitive sport. *The Sport Psychologist, 14,* 229-252.

Lindquist, K.A. (2013). Emotions emerge from more basic psychological ingredients: a modern psychological constructionist approach, *Emotion Review, 5,* 356-368.

Martinent, G., & Ferrand, C. (2009). A naturalistic study of the directional interpretation process of discrete emotions during high-stakes table tennis matches. *Journal of Sport and Exercise Psychology, 31,* 318-336.

Matsumoto, D., Keltner, D., Shiota, M.N., O'Sullivan, M. & Frank, M.G., &. (2008). Facial Expressions of Emotion. In M. Lewis, J.M. Haviland-Jones, & L.F. Barrett (Eds.), *Handbook of emotions* (3rd ed., pp. 211–234). New York: Guilford Press.

Mauss, I. B., Bunge, S. A., & Gross, J. J. (2007). Automatic emotion regulation. *Social and Personality Psychology Compass, 1*, 146-167.

Moesch, K., & Apitzsch, E. (2012). How do coaches experience psychological momentum? A qualitative study of female elite handball teams. *The Sport Psychologist, 26*, 435–453.

Moesch, K., Kenttä, G., Bäckström, M., & Mattsson, C.M. (2015). Exploring nonverbal behaviors in elite handball: How and when do players celebrate?. *Journal of Applied Sport Psychology, 27, 94-109.*

Moll, T., Jordet, G., & Pepping, J.-G. (2010). Emotional contagion in soccer penalty shootouts: Celebration of individual success is associated with ultimate team success. *Journal of Sport Sciences, 28*, 983–992.

Morrison, A. B., Conway, A. R. A., & Chein, J. M. (2014). Primacy and recency effects as indices of the focus of attention. *Frontiers in Human Neuroscience, 8*, 6.

Orgeta, V. (2009). Specificity of age differences in emotion regulation. *Aging and Mental health, 13 (6),* 818-826.

Panksepp, J. (1998). *Affective neuroscience: The foundations of human and animal emotions.* New York: Oxford University Press.

Patton, M. Q. (1990). *Qualitative evaluation and research methods* (2nd ed). Newbury Park, CA: Sage.

Price, T. F., Peterson, C. K., & Harmon-Jones, E. (2012). The emotive neuroscience of embodiment. *Motivation and Emotion, 36*, 27–37.

Ronglan, L. T. (2007). Building and communicating self-efficacy: A season-long in-depth study of an elite team. *The Sport Psychologist, 21*, 78–93.

Rothbart, M.K., & Bates, J.E. (2006). Temperament. In W. Damon (Series Eds.) & N. Eisenberg (Vol. Ed.), *Handbook of child psychology: Vol. 3. Social, emotional, and personality development* (6th ed., pp. 99-166). Hoboken, NJ: Wiley.

Rothermund, K., Voss, A., & Wentura, D. (2008). Counter-regulation in affective attentional bias: A basic mechanism that warrants flexibility in motivation and emotion.. *Emotion, 8*, 34-46.

Ruiz, M.C., & Hanin Y.L. (2011). Perceived impact of anger on performance of skilled karate athletes. *Psychology of Sport and Exercise, 12*, 242–249.

Ruiz-Belda, M. A., Fernández-Dols, J. M., Carrera, P., & Barchard, K. (2003). Spontaneous facial expressions of happy bowlers and soccer fans. *Cognition and Emotion, 17*, 315–326.

Russell, J. A. (2009). Emotion, core affect, and psychological construction. *Cognition and Emotion, 23*, 1259-1283.

Sève, C., Poizat, G., Saury, J., & Durand, M. (2006). A grounded theory of elite male table tennis players' activity during matches. *The Sport Psychologist, 20*, 58-73.

Sève, C., Ria, L., Poizat, G., Saury, J., & Durand, M. (2007). Performance-induced emotions experienced during high-stakes table tennis matches. *Psychology of Sport and Exercise, 8*, 25-46.

Silvers, J.A., McRae, K., Gabrieli, J.D.E., Gross, J.J., Remy, K.A., & Ochsner, K.N. (2012). Age-related differences in emotional reactivity, regulation, and rejection sensitivity in adolescence. *Emotion, 12(6)*, 1235–1247.

Strauss, A., & Corbin, J. (1998). *Basics of qualitative research: Techniques and procedures for developing grounded theory* (2nd ed.). Newbury Park, CA: Sage.

Tamminen, K., & Crocker, P.R.E. (2013). „I control my own emotions for the sake of the team": Emotional self-regulation and interpersonal emotion regulation among female high-performance curlers. *Psychology of Sport and Exercise, 14,* 737-747.

Tomkins, S.S. (1962). *Affect, imagery, consciousness: Vol. 1. The positive affects*. New York: Springer.

Uphill, M.A., McCarthy, P.J., & Jones, M.V. (2009). Getting a grip on emotion regulation in sport: Conceptual foundations and practical applications. In S. Hanton & S. Mellalieu (Eds.), *Advances in applied sport psychology* (pp. 162–194). London: Routledge.

Uphill, M.A., Lane, A.M., & Jones, M.V. (2012). Emotion regulation questionnaire for use with athletes. *Psychology of Sport and Exercise, 13*, 761-770.

Uphill, M.A., Groom, R., & Jones, M.V. (2014). The influence of in-game emotions on basketball performance. *European Journal of Sport Science, 14*, 76-83.

Van Raalte, J.L., Brewer, B.W., Cornelius, A.E., & Petitpas, A. J. (2006). Self-presentation effects of self-talk on perceptions of tennis players. *Hellenic Journal of Psychology, 3,* 134-149.

Vast, R. L., Young, R. L., & Thomas, P. R. (2010). Emotions in sport: Perceived effects on attention, concentration and performance. *Australian Psychologist, 45*, 132-140.

Warr, P.B., & Knapper, C. (1968). *The perception of people and events*. London, U.K.: John Wiley & Sons.

Webb, T.L., Miles, E., & Sheeran, P. (2012). Dealing with feeling: A meta-analysis of the effectiveness of strategies derived from the process model of emotion regulation. *Psychological Bulletin, 138(4)*, 775-808.

Woodman, T., Davis, P. A., Hardy, L., Callow, N., Glasscock, I., & Yuill-Proctor, J. (2009). Emotions and sport performance: An exploration of happiness, hope and anger. *Journal of Sport and Exercise Psychology, 31*, 169-188.

Appendix: Informed Consent

Studieninformation

Name der Studie

„Emotional Expression in Table Tennis“

Ziel der Studie

Emotionen spielen eine große Rolle im Sport. Es konnte gezeigt werden, dass nach einem Sieg vermehrt positive und nach einer Niederlage vermehrt negative Emotionen auftreten. Bisher gibt es jedoch noch wenig eindeutige Befunde bezüglich Emotionen, die während eines Spiel auftretens. Diese Studie hat deswegen das Ziel, anhand von Tischtennisspielen zu untersuchen, welche Emotionen im Verlauf eines Spiels auftreten, wie diese ausgedrückt werden und sich letztendlich auch auf den weiteren Spielverlauf auswirken.

Beschreibung des Vorgehens

Zunächst wird ein Meisterschaftsspiel mit einer Videokamera aufgenommen. Im Anschluss wird ein Interview zu den ersten vier und den letzten sechs Punkten von drei verschiedenen Sätzen durchgeführt. Die Fragen beziehen sich auf das Erleben und Ausdruck von Emotionen nach den gespielten Punkten. Die Dauer des Interviews liegt zwischen 60 und 90 Minuten.

Bedeutung der Ergebnisse

Die Ergebnisse können zu einem besseren Verständnis für die Rolle von Emotionen im Sport beitragen. Hierbei wird zum Beispiel untersucht, in welchen Situationen Sportler/innen besonders emotional reagieren und inwiefern diese Reaktion sich auf die sportliche Leistung auswirkt.

Datenverarbeitung

Damit keine wichtigen Informationen verloren gehen, wird das Interview mit einem Audio Aufnahmegerät aufgenommen und dann in Schriftform gebracht. Die Videodateien dienen nur als Erinnerungshilfe während des Interviews und werden nicht explizit ausgewertet. Für die weitere wissenschaftliche Auswertung werden alle Angaben, die zu einer Identifizerung der Person führen könnten, verändert oder entfernt.

Weitere Informationen

Falls Fragen oder Unklarheiten bezüglich des Ziels oder des Vorgehens der Studie bestehen, können Sie sich jederezeit an den zuständigen Studienleiter wenden.

Einverständniserklärung

Mir ist bekannt, dass die Teilnahme freiwillig und ich sie jederzeit ohne Angabe von Gründen und ohne persönlichen Nachteil widerrufen kann. Meine Daten werden dann vollständig gelöscht. Hierüber erhalte ich eine Nachricht. Ich habe die Studieninformation gelesen und hatte die Gelegenheit Nachfragen zustellen. Ich erkläre mich damit einverstanden, an der Studie teilzunehmen.

Ja ☐ Nein ☐

Zukünftige Kontaktaufnahme

Ich bin damit einverstanden, für eventuelle Rückfragen bezüglich der Studie kontaktiert zu werden. Hierzu bleiben meine Kontaktdaten bis zum Ende des Forschungsprojektes gespeichert.

Ja ☐ Nein ☐

Emailadresse:

Unterschrift des Teilnehmers/ der Teilnehmerin _____

Datum/Ort _____

Unterschrift des Studienleiters _____