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# RaY

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- 1 The relationship between multidimensional perfectionism and pre-competition emotions of
- 2 youth footballers

### 3 **Abstract**

#### 4 Objectives

5 Research has found that trait and dispositional perfectionism are related to pre-competition  
6 emotions. However, less is known about whether other aspects of perfectionism, such as  
7 perfectionistic cognitions, are related to pre-competition emotions. To address this limitation,  
8 the current study examined (i) the relationship between self-oriented and socially prescribed  
9 perfectionism and pre-competition emotions, and (ii) whether perfectionistic cognitions  
10 predict pre-competition emotions after controlling for these two dimensions of perfectionism.

#### 11 Design

12 A cross-sectional survey.

#### 13 Method

14 Two hundred and six youth footballers ( $M$  age = 15.54 years,  $SD$  = 1.93) completed self-  
15 report measures prior to their next competition.

#### 16 Results

17 Regression analyses revealed socially prescribed perfectionism was a positive predictor of  
18 anger, while self-oriented perfectionism was a positive predictor of excitement. After  
19 controlling for self-oriented and socially prescribed perfectionism, perfectionistic cognitions  
20 were a positive predictor of anxiety, anger, and dejection.

#### 21 Conclusion

22 The findings suggest that perfectionistic cognitions are important in regard to pre-competition  
23 emotions.

24 *Keywords:* adolescents; sport; cognitions; anxiety; anger; dejection

25

## Introduction

26           How an athlete feels prior to competition is important. Pre-competition emotions have  
27 been shown to influence the behavioural, motivational, physical, and cognitive functioning of  
28 athletes (e.g., Martinent & Ferrand, 2009). Athletes experiencing positive pre-competition  
29 emotions are normally better prepared, braced for competition, and energised, whereas  
30 athletes experiencing negative pre-competition emotions are more prone to being ill-prepared,  
31 distracted, and having displaced energy (e.g., Vast, Young, & Thomas, 2010). Apart from the  
32 implications for performance, over time, pre-competition emotions will also likely influence  
33 athlete wellbeing. Again, positive emotions are conducive to better wellbeing and negative  
34 emotions are not (Diener, 2000). Research suggests that athletes vary considerably in the  
35 emotions that they experience before competition with many athletes regularly reporting  
36 difficulty managing their emotions (Campo et al., 2016). Therefore, in order to better  
37 understand why some athletes report more negative and less positive pre-competition  
38 emotions, and vice versa, it is necessary to identify the factors which explain the differences  
39 between athletes in their pre-competition emotions.

40           Emotions are complex experiences of consciousness, bodily sensation, and behaviour  
41 that reflect the significance of an event (Barrett Mesquita, Ochsner, & Gross, 2007). Although  
42 emotion, mood, and affect are often used interchangeably, emotion is distinct from mood and  
43 affect. Emotions (e.g., happiness) are generally short in duration, high in intensity, and relate  
44 to specific events (Lazarus, 2000). Mood (e.g., a good mood), by contrast, is a more  
45 prolonged experience encompassing a global set of emotions. We experience mood on a day-  
46 to-day basis and it is relatively long-lasting, lower in intensity, and less specific than emotion  
47 (Ekkekakis, 2013). Moods can occur without a specific event whereas emotions are activated  
48 by a significant event. For example, when a person is angry, that person is typically angry  
49 about something specific, whereas someone can feel down without an obvious reason.

50 Finally, affect refers to two broad aspects of all emotional experiences: hedonic (pleasure-  
51 displeasure) and arousal (sleepy-activated) (Barrett et al., 2007). Affect is categorised into  
52 positive (e.g., feeling good) and negative (e.g., feeling bad) experiences, is experienced  
53 continually, but has varying degrees of intensity over time.

54 One popular approach to understanding emotions is cognitive-motivational-relational  
55 theory (CMR; Lazarus, 1991). In this theory, emotions are deemed to arise from the  
56 interdependent effects of primary and secondary appraisal of meaningful events (Lazarus,  
57 2000). Primary appraisal determines whether a situation or an event is personally relevant and  
58 congruent with an athlete's goals and core values. Secondary appraisal represents an  
59 evaluation of perceived coping options, which then forms the basis for behaviour. Lazarus  
60 argued that different emotions emerge because of broadly different appraisal patterns and that  
61 each emotion is underpinned by a core relational theme. A core relational theme is the  
62 perception of benefit or harm underlying positive and negative emotions. For example, a  
63 positive emotion (e.g., happiness) is considered to emerge when individuals appraise progress  
64 towards a goal, whereas a negative emotion (e.g., anxiety) is believed to arise when  
65 individuals appraise uncertain existential threat.

66 Athletes can express a range of pre-competition emotions both positive (e.g.,  
67 excitement and enjoyment) and negative (e.g., anxiety, anger, and dejection) (Jones, Lane,  
68 Bray, Uphill, & Catlin, 2005). The function of these emotions is complex. Some pre-  
69 competition emotions can facilitate performance but the same emotion, under different  
70 circumstances, may impair performance (Hanin, 2010). For example, anxiety, an emotion  
71 underpinned by a core relational theme of facing uncertain existential threat, is a common and  
72 normal experience for athletes and can fuel greater mental effort when experienced as  
73 facilitative (Campo et al., 2016). However, anxiety may also cause muscle tension,  
74 concentration disruption, and impaired performance (Hanin, 2010). Anger is similar in its

75 complexity. Anger, an emotion underpinned by the core relational theme of a demeaning  
76 offence against me and mine, has the potential to mobilize energy and therefore improve  
77 performance but may also impair performance because it can disrupt the focus of attention,  
78 decision-making, and skill execution (Campo et al., 2016). Notwithstanding these  
79 complexities, generally, negative emotions are considered more undesirable than positive  
80 emotions because they are more likely to drain energy, overload attention, and decrease  
81 readiness for competition, whereas positive emotions are likely to energize behaviour and  
82 help maintain mental states that are conducive to better performance (Hanin, 2010).

### 83 **Personality as a critical antecedent of emotion**

84       Personality characteristics influence the experience of emotions as they imbue  
85 achievement contexts with meaning that affects the appraisal process (Duda & Hall, 2001).  
86 They can also encapsulate goals, intentions, and coping behaviours that are relevant to the  
87 overall stress/emotion process (Lazarus, 2000). For these reasons, researchers and  
88 practitioners have been interested in identifying personality characteristics that may provide  
89 resiliency, or may confer vulnerability, in emotion and stress-related processes. Research has  
90 found several personal factors that may buffer individuals from stress and negative emotions  
91 during primary appraisal by increasing the likelihood of a significant event being appraised as  
92 challenging rather than as threatening. These factors include self-confidence, task orientation,  
93 and conscientiousness (Nicholls & Polman, 2007). Conversely, other personal factors have  
94 been found to increase stress and negative emotions by increasing the likelihood of a  
95 significant event being appraised as threatening and that the demands of the situation exceed  
96 coping resources. These factors include (low) self-esteem, ego orientation, and neuroticism  
97 (Nicholls & Polman, 2007). With these findings in mind, it is evident how in response to the  
98 same events, personality characteristics will contribute to how “people perceive themselves

99 differently, think differently, cope differently, and experience and display emotions  
100 differently” (Lazarus, 1998, p. 213).

101 Perfectionism is a multidimensional personality characteristic which reflects the need  
102 to perfect the self (Hewitt, Flett, & Mikail, 2017). Some researchers consider perfectionism to  
103 be a disposition (e.g., Stoeber, Corr, Smith, & Saklofske, 2018), whereas others consider it to  
104 be a trait (e.g., Hewitt et al, 2017). Hewitt and Flett’s (1991) model of perfectionism includes  
105 three trait dimensions: perfectionistic standards directed toward the self (self-oriented  
106 perfectionism; SOP), directed toward others (other-oriented perfectionism; OOP), or  
107 perceived to be directed from others (socially-prescribed perfectionism; SPP). SOP and SPP  
108 are particularly relevant to this study. This is because both of these dimensions are related to  
109 personal outcomes. In the case of SPP, it is related only to negative outcomes. In the case of  
110 SOP it is more ambivalent as it is related to both negative and positive outcomes (e.g.,  
111 Stoeber & Childs, 2010). On the role of SOP and SPP in stress/emotion processes, Hewitt and  
112 Flett (2002) describe processes of stress generation, anticipation, perpetuation, and  
113 enhancement. Underscoring these processes is the notion that unrealistic goals are tied to self-  
114 worth and that a preoccupation with the importance of goals features heavily in the way  
115 meaning is given to attainment. These features in turn influence the thoughts experienced  
116 when pursuing goals including prompting the experience of self-defeating cognitive styles  
117 (e.g., rumination), the tendency to catastrophize and exaggerate the consequences of failing,  
118 and unconstructive coping behaviours (e.g., avoidance) (Flett & Hewitt, 2016).

119 When considering the relationship between perfectionism and pre-competition  
120 emotions, specifically, competition provides an especially important situation for athletes  
121 with higher levels of SOP and SPP. For both SOP and SPP, competition offers a means of  
122 self-validation, enhancement, or annihilation, when important goals are achieved or not.  
123 However, based upon the features of SOP and SPP, the specific emotions experienced are

124 likely to be different. SOP is complicated in that movement towards goals is possible due to  
125 greater perceived control over personally meaningful goals (i.e., SOP is associated with the  
126 pursuit of personal goals). As such, the anticipatory experience prior to competition may  
127 include both positive emotions associated with the possibility of success and negative  
128 emotions associated with the possibility of failure. Conversely, SPP includes goals over  
129 which the individual has little control (i.e., SPP is associated with the pursuit of goals  
130 imposed by others). In which case, there is little opportunity for respite from negative  
131 emotional experiences via goal attainment. The anticipatory experience prior to competition  
132 is therefore more likely to be dominated by negative emotions as personal effort is considered  
133 largely futile and failure, to some degree, is likely to be perceived as inevitable.

134         There is a significant amount of research which examines SOP, SPP and general  
135 emotions outside of sport (e.g., in university students, school-aged children, and adult  
136 community samples). This research indicates that SPP is consistently associated with negative  
137 emotions. SPP has displayed significant positive and small-to-medium relationships with  
138 anger, anxiety, and sadness (e.g., Hewitt & Flett, 1991, Hewitt & Flett, 2002; Stornelli, Flett  
139 & Hewitt, 2009). SPP has also displayed a significant negative and small relationship with  
140 happiness (e.g., Stornelli et al., 2009). The relationship between SOP and emotions, on the  
141 other hand, is less straightforward. In relation to specific emotions, SOP has displayed a  
142 significant positive and small-to-medium relationships with anxiety, anger, and sadness (e.g.,  
143 Flett, Hewitt, & Cheng, 2008; Saboonchi & Lundh, 2003; Smith et al., 2016), whereas on  
144 other occasions these relationships have been non-significant (e.g., Akram, Ellis, Myachykov,  
145 Chapman, & Barclay, 2017). In regard to positive emotions, SOP has displayed a significant  
146 negative and small relationship with happiness (e.g., Stornelli et al., 2009), whereas on other  
147 occasions this relationship has been non-significant (e.g., Flett et al., 2008). SOP has also  
148 displayed a significant positive and medium relationship with enjoyment (Flett et al., 2016).



149 Findings outside of sport are comparable to those in sport. Perfectionism has been  
150 examined in relation to general emotions (i.e., emotions associated with sport participation)  
151 and emotions following mistakes, and mainly in regard to negative emotions. In terms of this  
152 research, significant positive and small-to-medium relationships have been found between  
153 perfectionism dimensions similar to SOP and SPP and negative emotions in the form of  
154 anxiety, anger, and dejection (e.g., Dunn, Gotwals, Causgrove Dunn, & Syrotuik, 2006;  
155 Lizmore, Dunn, & Causgrove Dunn, 2016; Martinent, Ferrand, Guillet, & Gauthier, 2010). In  
156 regard to pre-competition emotions, the majority of studies have focused on anxiety.  
157 Dimensions of perfectionism similar to SOP and SPP displayed significant positive and  
158 small-to-medium relationships with cognitive anxiety in the lead up to competition in some  
159 studies (e.g., Hall, Kerr, & Matthews, 1998), whereas other studies have found that the  
160 relationship between personal standards (a dimension of perfectionism similar to SOP) and  
161 pre-competition anxiety to be non-significant (e.g., Frost & Henderson, 1991). There is also  
162 some research examining anger in sport, which has found significant positive and small-to-  
163 medium relationships between concern over mistakes (a dimension of perfectionism similar  
164 to SPP) and trait anger and anger in response to mistakes during performance (e.g., Dunn et  
165 al., 2006). However, to our knowledge, the relationship between perfectionism and pre-  
166 competition anger has not been examined. This is also the case generally in research  
167 regarding other pre-competition emotions in sport. The first purpose of the present study is to  
168 build on existing research by examining, for the first time, whether multidimensional  
169 perfectionism (SOP and SPP) predicts a range of pre-competition emotions in sport (anxiety,  
170 anger, dejection, happiness, and excitement).

### 171 **Perfectionistic cognitions and emotion**

172 It is likely that some of the emotions associated with trait or dispositional  
173 perfectionism are a result of a ruminative response style. Perfectionistic cognitions are

174 frequent automatic thoughts and images about the need to be perfect (Flett, Hewitt, Boucher,  
175 Davidson, & Munro, 1998). These thoughts are characterized by recurrent thoughts about the  
176 self-imposed pressure to be flawless, such as, “Why can’t I be perfect?” and “I should be  
177 perfect” (Flett et al., 1998). Perfectionistic cognitions are a state-like manifestation of  
178 perfectionism but their occurrence reflects a stable feature of a perfectionist’s cognitive  
179 experience when they are chronically activated (Hewitt et al., 2017). Nevertheless, because  
180 perfectionistic cognitions reflect a preoccupation with the attainment of perfection they tend  
181 to be activated by perceived failure or stressful events (Hewitt et al., 2017). Following a  
182 stressful event, perfectionistic individuals engage in rumination about falling short of their  
183 ideal standard and, therefore, rumination plays an important role in the subsequent emotions  
184 and distress they experience.

185         The majority of research that has examined perfectionistic cognitions has been outside  
186 of sport. Together with a strong relationship with SOP and SPP, this research has found a  
187 positive relationship between the frequency of perfectionistic cognitions and a range of  
188 negative emotions and stress-related factors. Frequent perfectionistic cognitions have been  
189 associated with self-criticism, negative forms of cognitive-emotion coping, and deficits in  
190 positive forms of cognitive-emotion coping (e.g., Macedo et al., 2017). Frequent  
191 perfectionistic cognitions have also been found to have a significant positive and medium-to-  
192 large relationship with negative affect and a number of specific emotions, such as anxiety,  
193 anger, and depressive symptoms (e.g., Flett et al., 1998). In addition, Flett and colleagues  
194 have found that frequent perfectionistic cognitions were a unique predictor of anxiety and  
195 depression after controlling for trait perfectionism (e.g., Flett, Hewitt, Whelan, & Martin,  
196 2007). Therefore, as suggested by Flett et al. (2007), the frequency of perfectionistic  
197 cognitions appears to offer additional information about the emotional experiences associated  
198 with perfectionism.

199           Research that has examined the experience of perfectionistic cognitions in sport is  
200 sparse. In one of two studies to date, Appleton, Hall, and Hill (2011) found that parent-  
201 initiated motivational climates were a significant predictor of athletes' perfectionistic  
202 cognitions. Specifically, athletes engage in more perfectionistic cognitions when they  
203 perceive that their parents create an achievement climate that is highly critical and  
204 disapproving of mistakes during competition. In the other study, Hill and Appleton (2011)  
205 examined the relationship between perfectionistic cognitions and symptoms of athlete  
206 burnout. Perfectionistic cognitions displayed significant positive and small relationships with  
207 reduced sense of accomplishment, physical/emotional exhaustion, and sport devaluation. In  
208 this study, perfectionistic cognitions also explained unique variance in burnout dimensions  
209 beyond dispositional perfectionism (SOP and SPP in context of sport). These findings suggest  
210 that not only is the sport environment potentially important in directing athletes' thoughts  
211 towards perfectionistic cognitions, but such cognitions may play a role in negative emotional  
212 experiences, such as burnout. Based on this research, it is reasonable to suggest that frequent  
213 perfectionistic cognitions may also play a wider role in regard to the pre-competition  
214 emotions experienced by athletes.

### 215 **The present research**

216           The current study had two purposes: (i) to examine the relationships between SOP and  
217 SPP, as manifested in sport, and pre-competition emotions in youth footballers and (ii) to  
218 examine whether perfectionistic cognitions predict pre-competition emotions after controlling  
219 for SOP and SPP. It was hypothesised that SPP will positively predict more negative  
220 emotions (anxiety, anger, and dejection), and SOP will positively predict both positive  
221 (happiness and excitement) and negative emotions (anxiety, anger, and dejection). It was also  
222 anticipated that frequent perfectionistic cognitions would positively predict positive and  
223 negative emotions after controlling for SOP and SPP.

224

## Method

### 225 Participants and procedure

226 Participants were 206 high level youth footballers (male = 78, female = 128,  $M$  age =  
227 15.53 years,  $SD = 1.93$ , range = 11 to 19 years) recruited from sports clubs, sports academies,  
228 and national teams across the United Kingdom. Their average length of sport participation  
229 was 9.07 years ( $SD = 2.98$ , range = 1 to 17 years). Informed consent was gained from each  
230 participant (and parent/guardian if under 18 years old) prior to completing the questionnaire.  
231 The questionnaire was completed either at their training venue or competition location  
232 between 45 minutes and 120 hours (i.e. 5 days) before their next game. The average time until  
233 their next game was 24.32 hours ( $SD = 25.79$ ). Participants were asked to indicate the  
234 importance of their next competitive match on a scale of 1 (*not important*) to 7 (*very*  
235 *important*). The average importance rating was 5.70 ( $SD = 1.49$ ).

### 236 Measures

237 **The Child and Adolescent Perfectionism Scale (CAPS).** The CAPS (Flett, Hewitt,  
238 Boucher, Davidson, & Munro., 1997) is a multidimensional perfectionism scale for use with  
239 children and adolescents and measures self-oriented perfectionism (SOP) and socially  
240 prescribed perfectionism (SPP). It contains 22 items rated on a 5-point scale (1 = *not at all*  
241 *true of me*, 5 = *very true of me*). The stem of the instrument was adapted to focus athletes on  
242 their participation in sport (“When practicing/playing football...”). By making this  
243 amendment the measure captures dispositional perfectionism (e.g., perfectionism specific to  
244 the domain of sport). Evidence for the validity and reliability of the scale has been provided  
245 by Hewitt, Caelian, Flett, Collins, and Flynn (2002). Researchers have suggested that this  
246 scale also has adequate psychometric properties when used to measure dimensions of  
247 perfectionism in athletes (e.g., Appleton, Hall, & Hill, 2009).

248 Due to the multiple factors structures reported for the CAPS (e.g., Flett et al., 1997,  
249 McCreary, Joiner, Schmidt, & Ialongo, 2004, O'Connor, Dixon, & Rasmussen, 2009), we  
250 used ESEM to examine the factor structure of the CAPS in the current study. For the analyses  
251 we used robust maximum likelihood estimator (MLR) in MPLUS 7.4 (Muthén & Muthén,  
252 2008) and TARGET rotation to guide cross-loadings with a target value of approximately  
253 zero (Asparouhov & Muthén, 2009). We used commonly adopted recommendations to assess  
254 fit (Hu & Bentler, 1999; Marsh, Hau, & Wen, 2004). Adequate fit was noted if  $\chi^2/df < 3.00$ ;  
255 RMSEA =  $<.08$ , CFI =  $>.90$  and TLI =  $>.90$ ; SRMR =  $<.08$ , BIC = lower represents better fit.  
256 Using these fit indices, the original CAPS structure provided less than adequate fit:  $\chi^2(208) =$   
257  $626.55, p <.001$ ;  $\chi^2/df = 3.01$ ; RMSEA =  $.10$ ; CFI =  $.71$ ; TLI =  $.68$ ; SRMR =  $.11$ ; BIC =  
258  $12123.34$ . So did the two alternative structures identified by other researchers: (1) McCreary  
259 et al. (2004):  $\chi^2(74) = 194.96, p <.001$ ,  $\chi^2/df = 2.63$ ; RMSEA =  $.09$ ; CFI =  $.87$ ; TLI =  $.84$ ;  
260 SRMR =  $.08$ ; BIC =  $7468.33$ ; (2) O'Connor et al. (2009):  $\chi^2(74) = 226.92, p <.001$ ,  $\chi^2/df =$   
261  $3.07$ ; RMSEA =  $.10$ ; CFI =  $.84$ ; TLI =  $.80$ ; SRMR =  $.07$ ; BIC =  $7573.40$ .

262 With this in mind, we used exploratory factor analysis (a combination of principal  
263 components analysis and principal axis factoring with parallel analysis) to derive a more  
264 psychometrically sound version of the CAPS that matched Flett et al.'s (1997) proposed  
265 structure. We identified that a two-factor version of the CAPS consisting of 10 items with the  
266 highest loading factors was the most robust in regard to exploratory and exploratory-  
267 confirmatory structure. For the subsequent ESEM, this model provided adequate fit:  $\chi^2(34) =$   
268  $61.12, p <.001$ ;  $\chi^2/df = 1.75$ ; RMSEA =  $.06$ ; CFI =  $.95$ ; TLI =  $.94$ ; SRMR =  $.06$ ; BIC =  
269  $5299.68$ . SOP was comprised of items 1, 2, 6, and 7 and SPP was comprised of items 5, 8, 10,  
270 12, 17, and 19. In support of the use of this version, it had adequate internal reliability (SOP:  
271  $\alpha = .72$ , SPP:  $\alpha = .88$ ) and was highly correlated with the full-length version of the CAPS  
272 (SOP:  $r = .75, p <.001$ , SPP:  $r = .97, p <.001$ ).

273           **Perfectionistic Cognitions Inventory (PCI)**. The PCI (Flett et al., 1998) is a 25-item  
274 measure of the frequency of experiencing perfectionism-related thoughts. Participants  
275 indicate how frequently they experienced each of the cognitions (e.g., “Why can’t I be  
276 perfect?”) over the last week on a 5-point scale (0 = *not at all*, 4 = *all of the time*). Higher  
277 scores indicate more frequent perfectionistic thinking. Evidence to support the validity and  
278 reliability associated with the scale has been provided by Flett et al. (1998). The PCI has also  
279 been used for investigations in sport (e.g., Hill & Appleton, 2011).

280           We also conducted ESEM to examine the factor structure of the PCI given that there  
281 is debate regarding its unidimensional versus multidimensional structure (see Stoeber,  
282 Kobori, & Brown, 2014a, 2014b). The same procedures were used as for the CAPS. Using  
283 the fit indices described above, the 25-item unidimensional PCI provided less than adequate  
284 fit:  $\chi^2(275) = 622.06, p < .001; \chi^2 / df = 2.26; RMSEA = .08; CFI = .76; TLI = .74; SRMR =$   
285  $.08; BIC = 14787.46$ . So did the 3-factor structure advocated by Stoeber et al. (2014):  $\chi^2(116)$   
286  $= 236.56, p < .001; \chi^2 / df = 2.04; RMSEA = .07; CFI = .87; TLI = .85; SRMR = .07; BIC =$   
287  $10175.46$ .

288           As with the CAPS, using exploratory factor analysis (again, a combination of  
289 principal components analysis and principal axis factoring with parallel analysis with parallel  
290 analysis) we identified that a unidimensional version of the PCI consisting of the 10 items  
291 with the highest factor loadings was the most robust in regard to exploratory and exploratory-  
292 confirmatory structure. For the subsequent ESEM, this model provided adequate fit:  $\chi^2(35) =$   
293  $72.29, p < .001; \chi^2 / df = 2.07; RMSEA = .07; TLI = .91; CFI = .93; SRMR = .05; BIC =$   
294  $5858.61$ . PCI items were 3, 8, 10, 12, 15, 16, 17, 19, 22, and 25. In support of the use of this  
295 version (PCI-short), it had high internal reliability ( $\alpha = .87$ ) and was highly correlated with  
296 the full-length version of the PCI ( $r = .95, p < .001$ ).

297           **Sport Emotion Questionnaire (SEQ).** The SEQ (Jones et al., 2005) is a 22-item  
298 measure of the emotions athletes commonly experience prior to competition. The SEQ  
299 examines five emotions which can be grouped into two higher-order dimensions: negative  
300 emotions (anxiety, anger, and dejection), and positive emotions (happiness and excitement).  
301 The participants were asked to indicate “how they feel right now, at this moment” in relation  
302 to their upcoming sports competition on a 5-point scale (0 = *not at all*, 4 = *all of the time*).  
303 Jones et al. (2005) have provided evidence of the reliability and validity of the SEQ. As with  
304 the two other instruments we assessed the factor structure of the SEQ. The original five-factor  
305 model provided acceptable fit:  $\chi^2(199) = 347.04$ ,  $p < .001$ ;  $\chi^2/df = 1.74$ ; RMSEA = .06; CFI =  
306 .93; TLI = .92; SRMR = .06; BIC = 10684.34.

### 307 **Analytical approach**

308           To test the hypotheses, we conducted five hierarchical regression analyses (one for  
309 each emotion). As differences in anticipatory emotions are likely to depend on how proximal  
310 to the event assessments are taken (e.g., Hanton, Thomas, & Maynard, 2004), we used the  
311 time until competition (‘time’) as a covariate in the main analysis. In Step 1, a predictor block  
312 consisting of time was entered. In Step 2, a predictor block consisting of SOP and SPP was  
313 entered so to assess the unique predictive ability of each dimension. Finally, in Step 3, a  
314 predictor block consisting of perfectionistic cognitions was entered so to evaluate the  
315 incremental predictive ability of perfectionistic cognitions.

## 316 **Results**

### 317 **Preliminary analysis**

318           Due to missing data from individual responses (> 5%), two participants were removed  
319 from the sample. Once these values were removed, there were 174 complete cases and 30  
320 cases with incomplete data. In the cases of incomplete data, the average of missing data due

321 to non-response was 1.82% ( $SD = 0.75$ , range = 1.45 to 4.35%). Each missing item was  
322 replaced using the mean of each case's available non-missing items from the relevant  
323 subscales. This method of imputation is considered to be an appropriate strategy when the  
324 amount of missing data is low (Graham, Cumsille, & Elek-Fisk, 2003).

325       Next, internal reliability analysis (Cronbach's alpha) was performed on each subscale.  
326 Internal consistencies are displayed in Table 1. All scales demonstrated sufficient internal  
327 consistency ( $\alpha > .70$ ). The measured variables were then screened for univariate outliers (see  
328 Tabachnick & Fidell, 2013). Standardized z-scores  $\pm 3.29$  ( $p < .001$ , two-tailed) were used as  
329 criteria for detecting univariate outliers. This procedure led to the removal of seven  
330 participants. Because multivariate outliers can distort the results of correlation and regression  
331 analysis, we removed one participant with a Mahalanobis distance larger than the critical  
332 value of  $\chi^2(8) = 21.96$  ( $p < .001$ ). The final sample was 196 participants.

333       When testing for normality, the dejection and anger variable were positively skewed  
334 (dejection skewness = 1.97,  $SE = 0.17$ ; anger skewness = 1.74,  $SE = 0.17$ ). All other variables  
335 were considered univariate normal (absolute skewness: mean = -0.26,  $SE = 0.17$ ; absolute  
336 kurtosis: mean = -1.04,  $SE = 0.35$ ). The two skewed variables (dejection and anger) were  
337 subsequently transformed as per the guidelines provided by Tabachnick and Fidell (2013).  
338 The transformed variables were substantially less skewed (dejection skewness = 0.37,  $SE =$   
339  $0.17$ ; anger skewness = 0.47,  $SE = 0.17$ ) and both had a significant positive and large linear  
340 relationship with the original variable (dejection:  $r = .81$ ; anger:  $r = .85$ ). These transformed  
341 variables were used in subsequent analyses.

#### 342 **Descriptive statistics, reliability, and bivariate correlations**

343       Means, standard deviations, reliability coefficients, and bivariate correlations are  
344 reported in Table 1. Participants reported high levels of SOP (5-point scale), moderate levels



345 of SPP (5-point scale), and moderate levels of perfectionistic cognitions (5-point scale). The  
346 sample also reported low-to-moderate levels of pre-competition emotions. Notably, the levels  
347 of anger and dejection were low. Overall, the descriptive statistics suggest that, in regard to  
348 pre-competition emotions, the youth footballers had largely positive experiences, with few of  
349 them reporting negative experiences. Pearson correlation coefficients were computed between  
350 SOP, SPP, perfectionistic cognitions, and pre-competition emotions (Table 1). Using Cohen's  
351 recommendation (1988), both SOP and SPP displayed a significant positive and medium  
352 relationship with perfectionistic cognitions. Also of note, SOP displayed a significant positive  
353 and small relationship with anxiety and excitement, while SPP displayed a significant positive  
354 and small relationship with dejection and anger. There were no significant relationships  
355 between SOP and SPP and happiness. The frequency of perfectionistic cognitions displayed  
356 significant positive and small-to-medium relationships with anxiety, dejection, and anger.

### 357 **Hierarchical regression analyses**

358         The results of the hierarchical regression analyses are reported in Table 2. The first  
359 hierarchical regression included anxiety as the criterion variable. Time was not a significant  
360 predictor of anxiety. SOP and SPP accounted for an additional 1% of variance in anxiety.  
361 This was not statistically significant increase or model. Entering the frequency of  
362 perfectionistic cognitions resulted in an additional 11% of variance being explained in  
363 anxiety. This increase was statistically significant.

364         The second hierarchical regression included dejection as the criterion variable. Time  
365 was not a significant predictor of dejection. SOP and SPP accounted for an additional 2% of  
366 variance in dejection. This was not a statistically significant increase or model. Entering the  
367 frequency of perfectionistic cognitions resulted in an additional 4% of variance being  
368 explained in dejection. This increase was statistically significant.



394 hypothesised that frequent perfectionistic cognitions would predict positive and negative  
395 emotions after controlling for SOP and SPP.

### 396 **Multidimensional perfectionism and pre-competition emotions**

397 Consistent with the hypotheses, SPP was a unique positive predictor of anger  
398 (although in the context of a non-significant overall model). The predictive ability of SPP for  
399 pre-competition anger is aligned with research in sport that has reported similar findings for  
400 general anger (i.e., trait anger; Dunn et al., 2006) and anger following mistakes (i.e.,  
401 anger/dejection following mistakes; Lizmore et al., 2016). However, unlike previous research,  
402 our findings illustrate for the first time that a relationship between perfectionism and anger  
403 exists in context of anticipatory pre-competition experiences for athletes. In doing so, a  
404 clearer picture is emerging of the likely emotional experiences associated with higher SPP at  
405 key points in the performance process. Given the complex role of anger in regard to  
406 performance, it is difficult to assert that this is necessarily debilitating. However, it highlights  
407 the possibility that the ability to regulate anger effectively may be particularly important for  
408 athletes reporting higher SPP (see Hill & Davis, 2014). In addition, in regard to wellbeing,  
409 there is likely to be little benefit in an emotional experience that is characterised by higher  
410 levels of anger generally, anger when preparing for competition, and anger during  
411 competition.

412 In partial support of our hypotheses, SOP was a unique predictor of excitement. There  
413 is a small amount of evidence of similar relationships in sport for enjoyment of competition  
414 generally (e.g., Carter & Weissbrod, 2011). To our knowledge, however, this is the first time  
415 the relationship between SOP and a specific positive pre-competition emotion has been found  
416 in sport. In regard to explaining the relationship between SOP and excitement, it is  
417 noteworthy that SOP includes a mix of approach and avoidance goals (Kaye, Conroy, &

418 Fifer, 2008). Approach goals are typically associated the perceptions of competence and  
419 positive emotions (Huang, 2011). Therefore, what we have observed here may be reflective of  
420 the presence of approach goals in the motivational underpinning of SOP. The experience of  
421 positive emotions did not extend to happiness, however, it may be that this pattern of findings  
422 is due to differences in the two emotions in regard to intensity (excitement is typically a high  
423 intensity emotion whereas happiness is typically a low intensity emotion) and/or core  
424 relational themes (excitement typically reflects the anticipation of goal achievement whereas  
425 happiness typically focuses on making reasonable progress toward achieving a goal) (Jones et  
426 al., 2005; Lazarus, 2000).

427 SOP did not uniquely predict any negative pre-competition emotions (anxiety, anger,  
428 and dejection). In regard to anxiety, some previous studies examining dimensions of  
429 perfectionism similar to SOP and pre-competition anxiety have also found non-significant  
430 relationships, though often findings depended on if other dimensions of perfectionism are  
431 controlled for (Frost & Henderson, 1991; Hall et al., 1998; Stoeber Otto, Pescheck, Becker, &  
432 Stoll, 2007). Here, SOP had a significant positive relationship with anxiety at a bivariate level  
433 and this disappeared once SPP and perfectionistic cognitions were taken into account. In  
434 considering these findings, the relationship between SOP and anxiety may be wholly  
435 explained by perfectionistic cognitions. That is, SOP may contribute to higher anxiety but this  
436 is because SOP prompts more frequent perfectionistic cognitions. In regard to pre-  
437 competition dejection and anger, levels of SOP appear to provide little information regarding  
438 these emotions. However, it remains possible that SOP is important in terms of anger  
439 reactivity to mistakes in sport as this has been found by others examining dimensions of  
440 perfectionism similar to SOP (e.g., Dunn et al., 2006; Lizmore et al., 2016; Vallance, Dunn,  
441 & Dunn, 2006).

442 **Perfectionistic cognitions and pre-competition emotions**

443           In partial support of the hypotheses, frequent perfectionistic cognitions were found to  
444 be important when considering some but not all pre-competition emotions. Corroborating the  
445 results of previous studies of perfectionistic cognitions and emotions (e.g., Flett et al., 1998),  
446 we found that perfectionistic cognitions account for significant additional variance in negative  
447 emotions (anxiety, anger, and dejection) over and above the variance predicted by SOP and  
448 SPP. In regard to why this is the case, perfectionistic cognitions reflect a cognitive  
449 preoccupation with the attainment of perfection. The persistent engagement in thoughts  
450 regarding the need for perfect, and ongoing self-vigilance, draws intense attention to the  
451 discrepancy between the actual self and the desired perfect self (Flett et al., 2007). It is  
452 therefore unsurprising that these cognitions are related to negative emotions in athletes. With  
453 this in mind, our findings indicate that to better understand the pre-competition emotional  
454 experiences of athletes, practitioners need to consider not only whether athletes are higher or  
455 lower in SOP and SPP but also if they are experiencing more or less frequent perfectionistic  
456 cognitions as they approach competition.

457           Perfectionistic cognitions did not predict any positive emotions above SOP and SPP  
458 (happiness and excitement). Therefore perfectionistic cognitions appear comparatively  
459 unimportant in regard to the experience of positive emotions. While the role of perfectionistic  
460 cognitions in the experience of negative emotions is more intuitive, it is less clear why, given  
461 the prediction of negative emotions here, perfectionistic cognitions were not also negatively  
462 related to positive emotions beyond SOP and SPP (or related to negative emotions at all in the  
463 bivariate correlations). We consider this finding to be indicative of the notion of co-activation  
464 whereby the experience of higher levels of negative emotions do not necessarily coincide  
465 with the experience of lower levels of positive emotions, and that positive and negative  
466 emotions can be experienced concurrently (e.g., excitement and anxiety) (see Ekkekakis,  
467 2013). We also consider the finding to indicate that perfectionistic cognitions are more

468 relevant to the core relational themes that underpin negative emotions, such as perceptions of  
469 harm and threat, but are less relevant to the core relational themes that underpin positive  
470 emotions, such as perceptions of benefit or goal progress.

471         Given these mixed findings, one final important issue to acknowledge is the current  
472 debate regarding perfectionistic cognitions. In the current study, we adopted Flett et al.'s  
473 (1998) approach with the intention to capture perfectionistic rumination (i.e., negative,  
474 repetitive, and persistent thoughts that pertain to the perfect self). Nevertheless, Stoeber et al.  
475 (2014) recently argued that perfectionistic cognitions are multidimensional, and include  
476 different elements some of which are more positive (e.g., MPCCI; Kobori & Tanno, 2004).  
477 These two models offer alternative approaches to studying perfectionistic cognitions that may  
478 be useful in regard to understanding the different ways perfectionism manifests cognitively.  
479 Researchers may therefore wish to revisit the relationships examined in the current study  
480 using the approach advocated by Stoeber et al. (2014) and compare the two approaches in  
481 regard to predicting pre-competition emotions in athletes. This includes comparing  
482 ruminative perfectionistic cognitions, as measured here, and cognitions that capture a broader  
483 array of content such as striving, concerns, and demands (Stoeber et al., 2014).

#### 484 **Limitations and other future directions**

485         The present findings must be considered in the context of the study's limitations.  
486 Firstly, the study utilized a cross-sectional design. Longitudinal studies are needed to  
487 understand the relationships over time and determine whether SOP, SPP, and perfectionistic  
488 cognitions are associated with changes in pre-competition emotions over time. Secondly, the  
489 SEQ captures general pre-competition emotions. Some of the emotions, such as anxiety and  
490 anger include more complex dimensions not measured here (e.g., cognitive and somatic  
491 anxiety; Martens et al., 1990 and verbal and physical anger; Spielberger, 1999). Future

492 studies should consider examining the relationship between SOP and SPP, perfectionistic  
493 cognitions and these different dimensions of state anxiety and anger. Thirdly, as we amended  
494 both the CAPS and PCI in order to create more psychometrically sound versions of the  
495 measures, some caution may be required in terms of how well these newer versions compare  
496 to other versions used elsewhere. In two cases, SPP and PCI, the very large correlations  
497 between the new and the original scales suggest that there are unlikely to be any difference in  
498 findings. However, in the case of SOP, the correlation was lower so this might not be the  
499 case. Fourthly, our study focused on a sample comprised exclusively of youth footballers  
500 recruited from football academies and national teams. Future studies should therefore  
501 examine whether the findings generalize to other populations (e.g., adults or different sports)  
502 and contexts (e.g., competitions that are objectively very important or objectively  
503 unimportant). Lastly, contextual information collected from participants was limited (e.g.,  
504 they were not asked whether they anticipated success or failure). Such contextual factors may  
505 be important when considering the experience of pre-competition emotions. This information  
506 would make a valuable addition to future work of this kind.

## 507 **Conclusion**

508 This study provides the first study in sport to examine the relationships between SOP,  
509 SPP, perfectionistic cognitions, and pre-competition emotions. This study revealed that SPP  
510 was a unique significant positive predictor of anger, while SOP was a unique significant  
511 positive predictor of excitement. Moreover, perfectionistic cognitions predicted negative pre-  
512 competition emotions beyond SOP and SPP (anxiety, anger and dejection) but not positive  
513 emotions (happiness and excitement). Whether an athlete expects perfection of him or herself,  
514 believes others expect it of them, or experiences thoughts centred on perfection,  
515 perfectionism appears important in regard to pre-competition emotions. Those working with

516 athletes will need to take all these aspects of perfectionism into account to help footballers

517 manage pre-competition emotions.

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**Table 1**

*Descriptive statistics, bivariate correlations, and internal reliability for self-oriented and socially prescribed perfectionism, perfectionistic cognitions, and pre-competition emotions*

Variable	<i>M</i>	<i>SD</i>	$\alpha$	1	2	3	4	5	6	7	8
1. Self-oriented perfectionism	4.23	0.59	.72								
2. Socially prescribed perfectionism	2.26	0.83	.88	.05							
3. Perfectionistic cognitions	1.46	0.85	.87	.34**	.38**						
4. Anxiety	1.73	1.24	.87	.15*	.04	.32**					
5. Dejection	0.44	0.09	.87	.02	.16*	.24**	.35**				
6. Excitement	2.60	0.98	.85	.22**	-.02	.13	.21**	-.16*			
7. Anger	0.50	0.81	.88	.04	.21**	.29**	.25**	.73**	-.12		
8. Happiness	2.32	1.07	.89	.12	-.01	.12	.03	-.24**	.78**	-.19**	
9. Time	24.45	25.88	-	-.07	.06	.02	-.07	.11	-.16*	.09	-.06

*Note.* \*  $p < .05$ , \*\*  $p < .01$ , two-tailed.



**Table 2**

*Hierarchical regression analyses with self-oriented and socially prescribed perfectionism and perfectionistic cognitions predicting pre-competition emotions*

Criterion Variable	Predictor Variables	<i>F</i>	df	<i>R</i> <sup>2</sup>	<i>R</i> <sup>2</sup> change	$\beta$	<i>t</i>
<b>Anxiety</b>							
Step 1		0.94	1, 178	.01			
Step 2	Time					-.07	-0.97
Step 2		0.76	3, 176	.01	.01		
	Time					-.07	-0.88
	SOP					.09	1.16
	SPP					-.01	-0.09
Step 3		5.88***	4, 175	.12***	.11***		
	Time					-.07	-1.03
	SOP					-.01	-0.18
	SPP					-.13	-1.71
	PCI-S					.36***	4.58
<b>Dejection</b>							
Step 1		2.15	1,178	.01			
Step 2	Time					.11	1.47
Step 2		1.84	3, 176	.03	.02		
	Time					.10	1.39
	SOP					.03	0.42
	SPP					.13*	1.76
Step 3		3.16*	4, 175	.07*	.04*		
	Time					.10	1.35
	SOP					.03	-0.37
	SPP					.06	0.74
	PCI-S					.22**	2.64
<b>Excitement</b>							
Step 1		4.83*	1, 178	.03*			
Step 2	Time					-.16*	-2.20
Step 2		4.28**	3, 176	.07*	.04*		
	Time					-.15*	-2.01
	SOP					.20**	2.78
	SPP					-.03	-0.47
Step 3		3.61**	4, 175	.08	.01		
	Time					-.15*	-2.04
	SOP					.18*	2.30
	SPP					-.07	-0.88
	PCI-S					.10	1.26
<b>Anger</b>							
Step 1		1.48	1, 178	.01			
	Time					.09	1.22

Step 2		2.48*	3, 176	.04*	.03		
	Time					.08	1.12
	SOP					.04	0.58
	SPP					.17*	2.33
Step 3		4.18**	4, 175	.09**	.05**		
	Time					.08	1.08
	SOP					-.02	-0.31
	SPP					.09	1.16
	PCI-S					.24**	2.99
Happiness							
Step 1		0.61	1, 178	.00			
	Time					-.06	-0.78
Step 2		1.42	3, 176	.02	.02		
	Time					-.05	-0.70
	SOP					.14	1.80
	SPP					.04	0.53
Step 3		1.31	4, 175	.03	.01		
	Time					-.05	-0.72
	SOP					.11	1.43
	SPP					.01	0.15
	PCI-S					.08	0.99

Note. \* $p < .05$ , \*\* $p < .01$ , \*\*\*  $p < .001$ , two-tailed.