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# RaY

Research at the University of York St John For more information please contact RaY at <u>ray@yorksj.ac.uk</u> 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

#### Introduction

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

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

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

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

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

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

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

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

differently, think differently, cope differently, and experience and display emotionsdifferently" (Lazarus, 1998, p. 213).

Perfectionism is a multidimensional personality characteristic which reflects the need 101 to perfect the self (Hewitt, Flett, & Mikail, 2017). Some researchers consider perfectionism to 102 be a disposition (e.g., Stoeber, Corr, Smith, & Saklofske, 2018), whereas others consider it to 103 be a trait (e.g., Hewitt et al, 2017). Hewitt and Flett's (1991) model of perfectionism includes 104 three trait dimensions: perfectionistic standards directed toward the self (self-oriented 105 perfectionism; SOP), directed toward others (other-oriented perfectionism; OOP), or 106 perceived to be directed from others (socially-prescribed perfectionism; SPP). SOP and SPP 107 are particularly relevant to this study. This is because both of these dimensions are related to 108 109 personal outcomes. In the case of SPP, it is related only to negative outcomes. In the case of SOP it is more ambivalent as it is related to both negative and positive outcomes (e.g., 110 Stoeber & Childs, 2010). On the role of SOP and SPP in stress/emotion processes, Hewitt and 111 Flett (2002) describe processes of stress generation, anticipation, perpetuation, and 112 enhancement. Underscoring these processes is the notion that unrealistic goals are tied to self-113 worth and that a preoccupation with the importance of goals features heavily in the way 114 meaning is given to attainment. These features in turn influence the thoughts experienced 115 when pursuing goals including prompting the experience of self-defeating cognitive styles 116 (e.g., rumination), the tendency to catastrophize and exaggerate the consequences of failing, 117 and unconstructive coping behaviours (e.g., avoidance) (Flett & Hewitt, 2016). 118 119 When considering the relationship between perfectionism and pre-competition

emotions, specifically, competition provides an especially important situation for athletes with higher levels of SOP and SPP. For both SOP and SPP, competition offers a means of self-validation, enhancement, or annihilation, when important goals are achieved or not. However, based upon the features of SOP and SPP, the specific emotions experienced are

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

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

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

# 171 Perfectionistic cognitions and emotion

172 It is likely that some of the emotions associated with trait or dispositional173 perfectionism are a result of a ruminative response style. Perfectionistic cognitions are

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

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

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

# 215 The present research

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

#### Method

11

## 225 Participants and procedure

226	Participants were 206 high level youth footballers (male = 78, female = 128, <i>M</i> 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	<i>important</i> ). The average importance rating was $5.70 (SD = 1.49)$ .

#### 236 Measures

The Child and Adolescent Perfectionism Scale (CAPS). The CAPS (Flett, Hewitt, 237 Boucher, Davidson, & Munro., 1997) is a multidimensional perfectionism scale for use with 238 children and adolescents and measures self-oriented perfectionism (SOP) and socially 239 prescribed perfectionism (SPP). It contains 22 items rated on a 5-point scale (1 = not at all240 *true of me*, 5 = *very true of me*). The stem of the instrument was adapted to focus athletes on 241 their participation in sport ("When practicing/playing football..."). By making this 242 amendment the measure captures dispositional perfectionism (e.g., perfectionism specific to 243 the domain of sport). Evidence for the validity and reliability of the scale has been provided 244 245 by Hewitt, Caelian, Flett, Collins, and Flynn (2002). Researchers have suggested that this scale also has adequate psychometric properties when used to measure dimensions of 246 perfectionism in athletes (e.g., Appleton, Hall, & Hill, 2009). 247

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

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

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

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

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

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

### 307 Analytical approach

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

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

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

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

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

# 342 Descriptive statistics, reliability, and bivariate correlations

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

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

## 357 Hierarchical regression analyses

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

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

369 The third hierarchical regression included excitement as a criterion variable. Time was a significant negative and small predictor of excitement and it accounted for 3% of variance 370 in excitement (i.e., as the time until the match decreases, excitement increases). SOP and SPP 371 accounted for an additional 4% of variance in excitement. This increase was statistically 372 significant. SOP was a significant positive and small predictor. Time continued to be a 373 significant negative and small predictor. Entering the frequency of perfectionistic cognitions 374 did not account for any significant additional variance. Both time and SOP continued to be 375 significant predictors of excitement. 376

The fourth hierarchical regression included anger as the criterion variable. Time was not a significant predictor of anger. SOP and SPP accounted for 3% of variance in anger. This was not a statistically significant increase or model. However, it is noteworthy that SPP was a significant positive and small predictor of anger in this model. Entering the frequency of perfectionistic cognitions resulted in an additional 5% of variance being explained in anger. This increase was statistically significant.

The last criterion variable in the hierarchical regression analyses was happiness. Time was not a significant predictor of happiness. SOP and SPP accounted for 2% of variance. However, this was not a statistically significant increase or model. Entering the frequency of perfectionistic cognitions also did account for any significant additional variance.

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#### Discussion

The aims of this investigation were: (i) to examine the relationships between SOP and SPP, as manifested in sport, and pre-competition emotions in youth footballers and (ii) to examine whether perfectionistic cognitions predict pre-competition emotions after controlling for SOP and SPP. It was hypothesised that SPP would positively predict negative emotions (anxiety, dejection, and anger), and SOP would positively predict both positive (happiness and excitement) and negative emotions (anxiety, anger, and dejection). It was also

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

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

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

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

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

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

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

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

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

#### 484

### Limitations and other future directions

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

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

#### 507 Conclusion

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

- 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	М	SD	α	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

Criterion Variable	Predictor Variables	F	df	$R^2$	$R^{2 \text{ change}}$	β	t
Anxiety							
Step 1		0.94	1, 178	.01			
_	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
Dejection							
Step 1		2.15	1,178	.01			
	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
Excitement							
Step 1		4.83*	1, 178	.03*			
	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
Anger							
Step 1		1.48	1, 178	.01			
	Time					.09	1.22

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

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.