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8 **The positive association between perceived parental responsiveness and self-esteem,**  
9 **anxiety, and thriving among youth rugby players: a multigroup analysis**

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### Abstract

The purpose of this study was to examine the association between young players' perception of mother's and father's responsiveness with their self-esteem, anxiety (i.e., worry), and thriving (i.e., positive affect, vitality, and life satisfaction). In total, 314 male British rugby players with a mean age of 16.23 years ( $SD = 0.26$ ) completed the study in two phases:  $n = 124$  (first dataset), and  $n = 192$  (second dataset). Participants trained on average 3.14 times/week ( $SD = 0.94$ ) and had been involved in rugby for an average of 8.21 years ( $SD = 2.89$ ). Participants completed questionnaires measuring perceived parental responsiveness (PPR) for their mother and father, self-esteem, worry about sport performance, and thriving indicators (i.e., positive affect, vitality, and life satisfaction). The results consistently indicated that participants' perceptions of their mother's and father's responsiveness positively related to thriving, and negatively related to their worry about sport performance, mediated by their self-esteem. Overall, the study highlights the need for parents to be provided with insights into the value of being responsive to their child and being encouraged to regularly talk with their child regarding their needs and desires, and seeking to understand how their child perceives the support they currently receive.

46 Keywords: *Adolescent athletes, Parent-child relationship, Psychosocial outcomes, Youth sport*

47           There is extensive evidence that young athletes' sport experiences are largely influenced  
48 by the quality of their sport environment (e.g., Henriksen et al., 2010; Keegan et al., 2010;  
49 Knight, Berrow, et al., 2017). One challenge for youth sport stakeholders is to ensure that such  
50 environments not only enhance performance, but also lead to healthy and happy athletes  
51 (Bergeron et al., 2015; Harwood et al., 2019). Notably, parents are identified as a key contributor  
52 to the sporting environment, as the most important social influence on children until 13-14 years  
53 of age (Wylleman & Lavallee, 2004), and a significant influence throughout athletes' entire  
54 sporting careers (Knight, Berrow, et al., 2017).

55           Research in sport generally demonstrates a positive association between athletes'  
56 perception of their parents' supportive behaviours in sport and positive psychosocial outcomes  
57 (e.g., intrinsic motivation, self-efficacy, enjoyment for young athletes; Babkes & Weiss, 1999;  
58 Dorsch et al., 2016). For instance, a recent study among elite adolescent athletes showed that  
59 perceptions of mothers' and fathers' praise and understanding in sport was positively associated  
60 with increases in self-determined motivation (Lienhart et al., 2019). Studies have also  
61 demonstrated a positive association between young athletes perceptions' of their parents'  
62 mastery climate and increased intrinsic motivation, self-esteem, and reduced performance  
63 anxiety (O'Rourke et al., 2013, 2014). Moreover, there is evidence of a positive association  
64 between a secure parent-athlete attachment (i.e., the parent is perceived as available, responsive,  
65 and sensitive when necessary) and athletes' wellbeing (Felton & Jowett, 2013, 2017). Taken  
66 together, such findings indicate that parents have the potential to help athletes experience  
67 positive wellbeing and performance benefits in sport (Holt & Knight, 2014; Knight, Harwood, et  
68 al., 2017).

69           Unfortunately, however, some parental behaviours have also been associated with negative  
70 psychosocial outcomes such as pressure, anxiety, and dropout (e.g., Bois et al., 2009; Crane &  
71 Temple, 2015; Wuerth et al., 2004). For instance, a study involving adolescent athletes and their  
72 parents showed that athletes' perceptions of negative affect and conflict with parents was  
73 associated with their perception of pressure (Dorsch et al., 2016). Young athletes' perception of  
74 pressure could be related to maladaptive outcomes such as controlled forms of motivation,  
75 amotivation (Lienhart et al., 2019), and dropout (Crane & Temple, 2015). Studies have also  
76 demonstrated a positive association between athletes' insecure attachment with parents (i.e., the  
77 parent is perceived as unavailable, unresponsive, or inconsistent when necessary), thwarting of  
78 their basic psychological needs, and lower levels of wellbeing (Felton & Jowett, 2013, 2017).  
79 Clearly, the impact of parents within sport is complicated, and identifying mechanisms through  
80 which to enhance parents' positive impact upon young athletes performance and wellbeing is  
81 important (Knight et al., 2017).

82           Sport scholars characterise the joint experience of high performance and optimal wellbeing  
83 as thriving (Brown et al., 2017, 2018). Thriving is a desired end-state of optimal wellbeing that  
84 comprises five related components of hedonic (e.g., subjective wellbeing), eudemonic (e.g., goal  
85 accomplishment), psychological (e.g., positive self-regards), social (e.g., meaningful and deep  
86 connections with others), and health quality (e.g., health, fitness) (Feeney & Collins, 2015).  
87 Emerging research indicates that athletes' thriving could be enhanced through contextual  
88 facilitators such as perceived available support, high quality relationships (Brown & Arnold,  
89 2019), or unconditional positive regard (McHenry et al., 2020), while thriving could be hindered  
90 by controlling behaviours (Gucciardi et al., 2017).

91           Although research on thriving in sport is still in its infancy, research from social  
92           psychology examining close personal relationships indicates that a central component of an  
93           individual's thriving may be related to the responsiveness of the support they receive, or perceive  
94           (Maisel & Gable, 2009). Reis and colleagues (2004) defined responsiveness as a broad construct  
95           that describes how people in a relationship (e.g., parent and athlete) attend to and support each  
96           other's needs and goals. Individuals perceive support to be responsive when they feel the support  
97           provider understands, validates, and cares for them (Reis et al., 2004). Applied within the parent-  
98           child relationship, understanding occurs when a parent comprehends their child's core self (e.g.,  
99           needs, desires, weaknesses); validation is when a parent demonstrates respect or value for their  
100          child's view of their self; and when parents express affection, warmth, and concern for their  
101          child's wellbeing they are displaying care (cf, Reis et al., 2004; Reis & Gable, 2015).

102          Over the last decade, studies of responsiveness within close relationships have shown that  
103          when support is perceived as responsive by the support recipient it positively contributes to the  
104          wellbeing of both individuals (Reis & Gable, 2015). Specifically, perceived responsiveness is  
105          associated with positive psychosocial outcomes such as positive affect (Dooley et al., 2018),  
106          relationship satisfaction (Gadassi et al., 2016), enhanced self-efficacy (Lemay & Neal, 2014),  
107          more effective coping strategies (Dooley et al., 2018; Lemay & Neal, 2014), and lower anxiety  
108          (Selcuk et al., 2017). Despite the evidence of numerous positive outcomes arising from  
109          responsiveness, it has yet to be examined within the parent-athlete relationship. Given the role of  
110          high quality relationships on athletes' thriving, combined with sustained evidence that responsive  
111          interactions (Feeney & Collins, 2015) and perceived responsiveness (Reis & Gable, 2015; Selcuk  
112          et al., 2016; Tomlinson et al., 2016) can influence thriving, understanding if perceptions of  
113          parental responsiveness may influence thriving among young athletes is pertinent.

114           Additionally, research has indicated that responsiveness in a relationship may reduce  
115 anxiety (Selcuk et al., 2017), but despite parents being seen as a major contributor to anxiety in  
116 sport (Bois et al., 2009), this has not yet been evaluated in youth sport settings. Given that  
117 anxiety in sport, particularly precompetitive anxiety, is related with lower levels of enjoyment  
118 (Pekrun, 2018), which is a major determinant of sport dropout (Crane & Temple, 2015),  
119 identifying whether parental responsiveness may help to reduce anxiety is an important area for  
120 future research. Specifically, identifying whether parental responsiveness may reduce the worry  
121 component (i.e., concerns about performing poorly and the resulting negative consequences) of  
122 trait cognitive anxiety (Martens, 1977) may be particularly valuable because previous studies  
123 have demonstrated that it is worry, compared to other dimensions of trait anxiety (i.e., somatic  
124 anxiety, concentration disruption), that is most consistently and strongly related to young  
125 athletes' precompetitive anxiety (Wolf et al., 2015).

126           The association between perceived responsiveness and psychosocial outcomes such as  
127 thriving and anxiety may not, however, be direct. Rather, research indicates that self-esteem is an  
128 important mediator (Feeney, 2007; Feeney & Collins, 2015). This idea is rooted in attachment  
129 theory (Bowlby, 1973, 1988), which suggests that a securely attached relationship (i.e., one  
130 which occurs when a support provider is responsive, sensitive, and available) can help  
131 individuals develop a more positive perception of themselves (i.e., self-esteem) (Carr, 2013;  
132 Duchesne & Larose, 2007), which subsequently facilitates the development of other positive  
133 psychosocial outcomes (Marsh et al., 2006, 2018). For instance, research has shown that self-  
134 esteem interacts in the association between the perception of responsive support and increased  
135 wellbeing among couples (Feeney, 2004). Similarly, self-esteem has been shown to mediate the  
136 relationship between perceived responsive support and individual's own enjoyment and positive

137 experiences (Smith & Reis, 2012). Given such evidence, examining the influence of parent's  
138 responsiveness on athletes' self-esteem and potential mediating influence on athletes' thriving  
139 and anxiety is also necessary.

#### 140 **Study Purpose and Hypotheses**

141 Based on the aforementioned literature, the purpose of the current study was to examine  
142 the association between adolescent rugby players' perceptions of their mother's and father's  
143 responsiveness with thriving (i.e., positive affect, vitality, and life satisfaction) and the worry  
144 component of cognitive trait anxiety, mediated by their self-esteem.

145 The current study investigated three main hypotheses:

- 146 • Hypothesis 1: Players' perceptions of their mother's and father's responsiveness would be  
147 positively related to their self-esteem.
- 148 • Hypothesis 2: Players' self-esteem would be negatively related to their perceptions of  
149 worry but positively related to the thriving components of positive affect, vitality, and life  
150 satisfaction.
- 151 • Hypothesis 3: Players' self-esteem would mediate the relationships between athletes'  
152 perceptions of their mother's and father's responsiveness and worry and thriving.

153 Rugby was selected for the present study because it is one of the most popular competitive  
154 sports in the UK (Sport England, 2019), and players selected into the Rugby Football Union  
155 (RFU) academy programmes commit extensively to training and competing with their schools,  
156 clubs, and academy, meaning their parents are often heavily involved and committed to their  
157 child's rugby and thus, have numerous opportunities to influence their experience (Knight,  
158 2019).



**Method**

**Participants.** An a priori power analysis Monte Carlo simulation for indirect effect (Schoemann et al., 2017) was conducted to determine the minimal sample based on key variables (i.e., perceived responsiveness, self-esteem, and thriving) from studies with a similar methodology (Feeney, 2004; Feeney et al., 2017; Lemay & Neal, 2014; Tomlinson et al., 2016). In those studies, the association perceived responsiveness, self-esteem, and outcomes consistently demonstrated moderate ( $r = 0.3$ ) to large ( $r = 0.5$ ) effect sizes. Inputs for determining the minimal sample for indirect effects were the following:  $r = (0.35)$ ,  $\alpha = 0.05$ , power  $(1-\beta) = 0.80$ . The minimal sample size for indirect effects was estimated between  $N = 130$  for 80% of power, and  $N = 200$  for 95% of power. In total 314 male British rugby players with a mean age of 16.23 ( $SD = 0.26$ ,  $\min = 15.08$ ,  $\max = 16.58$ ), from two independent datasets with:  $n = 124$  (first dataset), and  $n = 192$  (second dataset) participated in the study. The participants trained on average 3.14 times/week ( $SD = 0.94$ ) and had been involved in rugby for an average of 8.21 years ( $SD = 2.89$ ). All had been selected to be part of one of the 14 England Rugby academies, which is the highest level of performance at this stage of their development. The majority (75.96%) of the participants lived with both their mother and father.

**Procedure.** Data collection occurred through an online survey. Data was collected over two successive years, providing two independent datasets offering an opportunity to replicate the findings from the first year in the second year, with a larger sample, and enable testing of the invariance of the model across the two datasets (Putnick & Bornstein, 2016).

The RFU was contacted to enquire into the possibility of collecting data from players attending an annual training camp held for players aged 16 years and under. Having obtained approval to attend the training camps, institutional ethical approval was sought and received.

182 Following receipt of ethical approval, a letter pertaining to this study was sent to the parents of  
183 all players attending the training camps, as well as the coaches from each academy. Parents with  
184 children aged under 16 years of age were asked to return an informed consent form to indicate  
185 they were happy for their son to complete the study survey, if their son wished too (and indicated  
186 this at the outset of the survey). As per our ethical approval, players aged 16 years provided their  
187 own consent (i.e., did not require parental consent) at the start of the survey.

188 On arrival at the training camp, all players were emailed an information letter about the  
189 study, along with a link to an online survey. The survey comprised a series of self-report  
190 questionnaires measuring their perceived responsiveness of their mother and their father, global  
191 self-esteem, the worry component of cognitive trait anxiety, and various factors of thriving (i.e.,  
192 affect, vitality, life satisfaction) as well as collecting basic demographic information (e.g., age,  
193 years involved in rugby, number of training per week, most involved parent in rugby, family  
194 structure). The total survey was designed to take no more than 15 minutes to complete.

195 **Measures.** Questionnaires for the study were carefully chosen based on: (1) the theoretical  
196 link that they demonstrated with the selected constructs, (2) their psychometric properties among  
197 similar samples, and (3) their brevity in order to allow a short duration for the study.

198 ***Perceived parental responsiveness.*** Perceived responsiveness of both mother's and  
199 father's was collected separately because research has shown that both mothers and fathers (or  
200 assimilated) can influence young athletes (Babkes & Weiss, 1999) and their perceived and actual  
201 involvement can differ (Clarke & Harwood, 2014). Such differences in actual or perceived  
202 involvement from mothers and fathers can result in athletes perceiving the parental support from  
203 their mothers and fathers differently (Dorsch et al., 2016) and as such it was important to  
204 understand their independent influence.

205           Players' perceptions of their mother's and father's responsiveness were assessed with a 6-  
206 item version of the Perceived Partner Responsiveness Scale (PPRS; Reis et al., 2017). The PPRS  
207 is intended to assess a specific target's responsiveness such as romantic partner, friends, or  
208 family in various settings (Reis et al., 2011, 2017). The PPRS assessed the extent to which  
209 participants perceived that a particular relationship is responsive to their needs. The six items  
210 are: my mother/father usually, (a) *knows me well*, (b) *understands me*, (c) *really listens to me*, (d)  
211 *seems interested in what I am thinking and feeling*, (e) *values my abilities and opinions*, and (f) *is*  
212 *responsive to my needs*. Responses were provided on a 7-point Likert scale ranging from 1 (*not*  
213 *at all*) to 7 (*completely true*). In the two datasets, players' perception of father responsiveness ( $\omega_t$   
214 = 0.89,  $\omega_t = 0.89$ ) and players' perception of mother responsiveness ( $\omega_t = 0.90$ ,  $\omega_t = 0.89$ )  
215 demonstrated a good internal consistency. Participants' responses on the six items were averaged  
216 respectively into single scores of perceived father/mother responsiveness with higher scores  
217 representing stronger perceptions of father/mother responsiveness.

218           ***Self-esteem.*** Players' self-esteem was assessed with five items from the short version of  
219 the Physical Self-Description Questionnaire (Marsh et al., 2010). This questionnaire was chosen  
220 because it aligns with the multidimensional perspective regarding individuals' self-perceptions,  
221 which is widely accepted within psychology (Fox & Lindwall, 2014; Marsh et al., 2018).  
222 Further, it has demonstrated strong psychometric properties in studies with adolescents (Duda et  
223 al., 2013; Marsh et al., 2010).

224           The players indicated the extent to which, during the last month in their everyday life, they  
225 had a lot to be proud of, they did well, or things turned out well; and if they were no good or if  
226 nothing they did ever seemed to turn out right (reversed items). Their responses were provided  
227 on a 5-point Likert scale anchored by 1 (*strongly disagree*) and 5 (*strongly agree*). In the two

228 datasets, the scale showed a good internal consistency ( $\omega_t = 0.76$ ,  $\omega_t = 0.82$ ). In each dataset,  
229 participants' responses on the five items were averaged to create a global score of self-esteem  
230 with higher scores indicating higher levels of self-esteem.

231 ***Cognitive trait sport anxiety (Worry).*** As mentioned above, worry is seen as the main  
232 contributor to pre-competitive anxiety. Thus, an appropriate measure to consider worry was  
233 selected, namely the five items from the Sport Anxiety Scale - 2 (Smith et al., 2006). This scale  
234 was selected because of its brevity and as it has demonstrated good psychometric properties  
235 among adolescent athletes (Smith et al., 2006). Players indicated the extent to which they usually  
236 felt before or while competing in sport (a) *worry that they not play well*, (b) *worry that they will*  
237 *let others down*, (c) *worry that they will not play at their best*, (d) *worry that they will play badly*,  
238 and (e) *worry that they will mess up during the game*. Their responses were provided on a 5-  
239 point Likert scale anchored by 1 (*not at all*) and 5 (*very much*). In the two datasets, the scale  
240 demonstrated a good internal consistency ( $\omega_t = 0.91$ , and  $\omega_t = 0.94$  respectively). Consequently,  
241 in the two datasets, participants' responses on the five items were averaged to create a global  
242 score of worry with higher scores indicating higher levels of worry before or while competing.

243 **Thriving.** In line with current perspectives that consider wellbeing as a multidimensional  
244 state that comprises a variety of sub-component indicators (Giles et al., 2020), the present study  
245 conceptualised thriving as an optimal state of wellbeing (Feeney & Collins, 2015). Research  
246 indicates that the wellbeing sub-components belonging to different categories can be explained  
247 by a general factor of wellbeing (i.e., thriving) (Jovanović, 2015; Longo et al., 2016, 2020).  
248 Usual indicators include positive affect, vitality, and life satisfaction (Gallagher et al., 2009;  
249 Gucciardi et al., 2017; Linley et al., 2009; Longo et al., 2016) and thus these were selected as the  
250 measures for thriving within the current study. The specific measures selected were the PANAS-

251 C (Ebesutani et al., 2012) in dataset 1, and PANAS (Watson et al., 1988) in dataset 2 to assess  
252 players positive affect, the subjective vitality scale (Ryan & Frederick, 1997) to assess  
253 participants' vitality, and the Cantril Ladder of self-rated life satisfaction (Cantril, 1965) to  
254 assess participants' life satisfaction. These scale were selected because they demonstrated good  
255 psychometric properties among a similar sample (Duda et al., 2013).

256 **Affect.** For the first data collection, positive and negative affect were assessed with the  
257 five positive affect items from the 10-item Positive and Negative Affect scale for Children  
258 (Ebesutani et al., 2012). Players rated on a 5-point Likert scale from 1 (*not at all*) to 5  
259 (*extremely*) the extent to which, at the moment, they felt *joyful, miserable, cheerful, mad, happy,*  
260 *afraid, lively, scared, proud, and sad.* The positive affect dimension demonstrated good internal  
261 reliability ( $\omega_t = 0.85$ ). Participants' responses on the five items were averaged to create a global  
262 score of positive affect, with higher scores indicating higher levels of positive affect. However,  
263 analysis indicated that the negative affect items lacked variance and demonstrated low factor  
264 loading. Consequently, the decision was made to only retain positive affect items in the analysis.  
265 For the second data collection, a longer scale was chosen with the aim of having a reliable  
266 measure for both positive and negative affect. Players affect were assessed with the 20-item  
267 Positive and Negative Affect Scale (Watson et al., 1988). The positive affect dimension  
268 demonstrated good internal reliability ( $\omega_t = 0.89$ ). Participants' responses on the 10 items were  
269 averaged to create a global score of positive affect, with higher scores indicating higher levels of  
270 positive affect. Despite good psychometric qualities, the account for players' negative affect was  
271 removed as it was not possible to compare between the two datasets.

272 **Subjective vitality.** In the two datasets, players' subjective vitality was assessed with the 5-  
273 item subjective vitality scale (Ryan & Frederick, 1997). Players rated, on a 5-point Likert scale

274 from 1 (*strongly disagree*) to 5 (*strongly agree*), the extent to which, during the last month in  
275 their everyday life, they felt full of excitement, they had high spirit, they looked forward to each  
276 day, they felt alert and awake, and if they had a lot of energy. The five items demonstrated a  
277 good internal reliability ( $\omega_t = 0.85$ , and  $\omega_t = 0.87$  respectively) for the two datasets. Participants'  
278 responses on the five items were averaged to create a global score of vitality with higher scores  
279 indicating higher levels of vitality.

280 ***Life satisfaction.*** In the two datasets, life satisfaction was assessed using the single item of  
281 Cantril Ladder of self-rated life satisfaction (Cantril, 1965). This ladder ranged from 0 (*I have*  
282 *the worst possible life for me at the moment*) to 10 (*I have the best possible life for me at the*  
283 *moment*). A higher score indicated higher level of life satisfaction.

284 ***Data analysis.*** All data were analysed with R-statistics (R Core Team, 2018). The data  
285 analysis strategy first considered the two datasets separately using the second dataset to replicate  
286 the findings and models from dataset 1. Eventually, as the measures, models, and results were  
287 similar between dataset 1 and 2, the two datasets were merged, and analysis consisted of  
288 multigroup analyses aimed at verifying if relationships were invariant between the two datasets.  
289 The full script of analyses, questionnaires used, and comprehensive results are available upon  
290 request to the corresponding author. Main analyses consisted of mediations accounting (1) for all  
291 the component paths of indirect effects, and (2) the magnitude and 95% confidence interval of  
292 indirect effects (Yzerbyt et al., 2018). The mediation analyses were performed with Structural  
293 Equation Modelling (SEM) including the measurement and structural models (Hayes et al.,  
294 2017). Support for the goodness of fit between the model and the observed data were considered  
295 when; (a) comparative fit index (CFI) and Tucker Lewis index (TLI) values were close to .95 or  
296 greater, and; (b) root mean square error of approximation (RMSEA) values were close to .06 or

297 below, and standardized root mean square residual (SRMR) values were close to .08 or below  
298 (Brown, 2015). SEM analyses also considered parameter estimates (e.g., factor loadings, error  
299 variances, factor variances) such as standardised residuals (Brown, 2015). Due to potential non-  
300 normal distribution of the data, SEM analyses were computed with robust maximum likelihood  
301 estimator with Satorra-Bentler scaled tests (Brown, 2015). The three hypotheses were tested  
302 together with one model accounting for participants' perceptions of their mother's  
303 responsiveness, and one model accounting for their perceptions of father's responsiveness.  
304 Overall, the data analysis strategy resulted in two independent models, discussed below.

## 305 **Results**

### 306 **Preliminary analyses**

307 In the two datasets the correlations between constructs were in line with previous work and  
308 hypotheses (see Table 1). Variable means, standard deviations, and correlations were also very  
309 similar in the two-independent datasets (see Table 1).

310 \*\*\*\*\*INSERT TABLE 1 HERE \*\*\*\*\*

311 In both datasets, the three components of thriving (e.g., positive affect, vitality, and life  
312 satisfaction) were positively correlated (see Table 1) with  $r = [0.43: 0.53]$  for the first dataset,  
313 and  $r = [0.45: 0.50]$  for the second dataset. Given that the combination of these components into  
314 a higher order factor of thriving is theoretically relevant (Feeney & Collins, 2015; Linley et al.,  
315 2009), Confirmatory Factorial Analyses (CFA) were performed to examine whether these three  
316 components could be accounted for by a global factor of thriving. CFA from the first dataset:  $\chi^2$   
317 (38) = 51.79,  $p = 0.067$ , CFI = 0.97, TLI = 0.95, RMSEA = 0.06, SRMR = 0.06, and second  
318 dataset ;  $\chi^2$  (100) = 136.97,  $p = 0.01$ , CFI = 0.96, TLI = 0.95, RMSEA = 0.05, SRMR = 0.06,  
319 demonstrated a good fit to the data. Further analyses provided support for the convergent and

320 discriminant validity with items loading above .070, and the average variance extracted (AVE)  
321 above 0.50 (0.57 for dataset 1, and 0.52 for dataset 2) (Hair et al., 2014). Thus, the scores of  
322 positive affect, vitality, and life satisfaction were averaged as a new variable, *thriving* ( $M = 3.63$   
323  $\pm 0.58$  and  $M = 3.63 \pm 0.061$  in the first and second datasets, respectively), with higher scores  
324 representing higher levels of thriving.

325 Subsequently, a multigroup factor analysis was conducted aiming at comparing the  
326 thriving construct in the two datasets. To do this, the latent variable was estimated with single  
327 indicators and fixed reliability ( $\alpha = 0.90$ ). This method controls for measurement errors and helps  
328 to maintain a good Type-1 error rate without increasing of the variability of the estimates  
329 (Savalei, 2019). The model comparison accounting for configural metric, scalar, and residual  
330 invariance did not demonstrate significant differences between the freely estimated and the fully  
331 constrained models:  $\Delta \chi^2(5) = 0.495$ ,  $p = 0.992$ .

### 332 **Main Results**

333 Regardless of whether mother's or father's responsiveness are considered, the results  
334 supported the three hypotheses. Participants' perceptions of their fathers' or mothers'  
335 responsiveness were positively related to their global self-esteem (for father,  $\beta = 0.506$ ,  $p <$   
336  $0.001$ ; for mother,  $\beta = 0.511$ ,  $p < 0.001$ ). The variance explained by the models for participants'  
337 self-esteem comprised between  $r^2 = 0.143$  and  $r^2 = 0.209$ .

338 The results showed that participants' self-esteem was negatively related with worry:  $\beta = [-$   
339  $0.345]$  for father, and  $\beta = [-0.384]$  for mother; but positively related to thriving:  $\beta = [0.596]$  for  
340 father, and  $\beta = [0.649]$  for mother. The analyses supported the mediating role of self-esteem in  
341 the relationships between father's or mother's responsiveness and worry (for father,  $\beta = -0.175$ ,  
342  $95\% \text{ CI} = [-0.293: -0.086]$ ; for mother,  $\beta = -0.196$ ,  $95\% \text{ CI} = [-0.296: -0.097]$ ). Overall, the



343 variance explained by the models for participants' worry comprised between  $r^2 = 0.117$  and  $r^2 =$   
344 0.151.

345 Finally, analyses supported the mediating role of self-esteem in the relationships between  
346 father's or mother's responsiveness and thriving (for father,  $\beta = 0.302$ , 95% CI = [0.157: 0.499];  
347 for mother,  $\beta = 0.332$ , 95% CI = [0.167: 0.496]). Overall, the variance explained by the models  
348 for participants' thriving was comprised between  $r^2 = 0.457$  and  $r^2 = 0.702$  (see Figures 1 and 2).

349 \*\*\*\*\*INSERT FIGURE 1 HERE \*\*\*\*\*

350 \*\*\*\*\*INSERT FIGURE 2 HERE \*\*\*\*\*

351 A two groups (dataset 1 and 2) factor analysis demonstrated a good fit to the data for  
352 perceived father responsiveness: SEM (Satorra-Bentler):  $\chi^2 (381) = 483.446$ ,  $p < 0.001$ , CFI =  
353 0.957, TLI = 0.957, RMSEA = 0.045 90% CI = [0.033: 0.056], SRMR = 0.076, and for  
354 perceived mother responsiveness: SEM (Satorra-Bentler):  $\chi^2 (381) = 396.182$ ,  $p = 0.285$ , CFI  
355 = 0.993, TLI = 0.993, RMSEA = 0.017 90% CI = [0.00: 0.035], SRMR = 0.069. A model  
356 comparison accounting for configural metric, scalar, and residual invariance did not demonstrate  
357 significant differences between the freely estimated and the fully constrained models (see Table  
358 2).

359 \*\*\*\*\*INSERT TABLE 2 HERE \*\*\*\*\*

## 360 Discussion

361 The purpose of the current study was to examine the association between adolescent rugby  
362 players' perceptions of their mother's and father's responsiveness with thriving (i.e., positive  
363 affect, vitality, and life satisfaction) and the worry component of cognitive trait anxiety,  
364 mediated by their self-esteem. The results from two independent datasets showed that players'  
365 perceptions of their mother's and father's responsiveness, mediated by their self-esteem, were

366 negatively related to worry before or while competing, and positively related to the thriving  
367 components of positive affect, vitality, and life satisfaction. Multigroup analyses demonstrated  
368 configural, metric, scalar, and residual invariance among the two independent datasets, which  
369 indicates robustness of the tested models.

370 In essence, perceived responsiveness simply accounts for the extent to which an individual  
371 perceives that a close-other understands them as a person, values their choices and opinions, and  
372 cares for them (Reis & Gable, 2015). One key advantage of assessing participants' perception of  
373 responsiveness is that it ensured that participants' perceptions was unconditional (e.g., rather  
374 than conditional) upon their sport participation and performances. This is because research has  
375 shown that perceived parental conditional support could participate in the development of  
376 perfectionism among adolescent athletes (Curran, 2018). More generally, perceived parental  
377 conditional regard is linked with negative psychosocial outcomes such as lower levels of  
378 wellbeing, poor coping strategies, or increases in trait anxiety (Assor et al., 2004; Assor & Tal,  
379 2012; Otterpohl et al., 2019). Therefore, an important finding of the present study is that  
380 although perceived responsiveness is not sport specific and therefore preventing of perception of  
381 conditional support, it was clearly related to participants' experiences in sport (i.e., worry).

382 Players' perceptions of mothers' and father's responsiveness was positively related to the  
383 thriving components of positive affect, vitality, and life satisfaction while mediated by their  
384 general self-esteem. Players' perceived mother's and father's responsiveness was also directly  
385 and positively related to players' thriving. As expected, based on previous studies investigating  
386 the association between perceived responsiveness and optimal wellbeing (i.e., thriving) in close-  
387 relationships (Feeney, 2004, 2007; Tomlinson et al., 2016), players' perceptions of their parents'  
388 responsiveness was largely associated to the explained variance of thriving. Such an association

389 is likely because players' that generally perceived their parents as responsive to their needs have  
390 the opportunity to develop positive self-perceptions leading to optimal wellbeing (Bowlby, 1988;  
391 Duchesne & Larose, 2007; Marsh et al., 2018). These results align the recent conceptualization  
392 of thriving in sport (i.e., a sustained high-level of performance, and dimensions of wellbeing;  
393 Brown et al., 2018). As research shows that thriving in sport is facilitated by contextual  
394 facilitators such as high quality relationships (Brown et al., 2017, 2018), the results of the present  
395 study extend such findings by demonstrating the specific association between players' perception  
396 of their parents' responsiveness and thriving. Therefore, the results of the present study reinforce  
397 the importance of considering parents as active partners in youth sport environments aiming at  
398 healthier and happier athletes' (Harwood et al., 2019; Knight, Harwood, et al., 2017).

399         The findings of the current study also highlighted that participants' self-esteem mediated  
400 the relationship between their perceptions of their mother's and father's responsiveness and one  
401 of the components of their trait cognitive sport anxiety. Specifically, in the present study, higher  
402 levels of perceived responsiveness from both mother's and father's was associated with lower  
403 levels of worry. Overall, the models in the present study illustrate a relatively modest  
404 contribution (i.e., 11 to 15% of the explained variance) of responsiveness to trait cognitive  
405 anxiety in sport. One potential explanation may be that perceived responsiveness is a general  
406 rather than a sport-specific construct, and as such may be less strongly related to sport-specific  
407 outcomes (such as trait cognitive sport anxiety). Identifying that responsiveness is related with  
408 lower levels of worry before or while competing is important because it provides an alternative  
409 perspective on parents' influence in sport, compared to the often cited research associating  
410 parental involvement with increases in athletes' anxiety (e.g., Barber et al., 1999; Bois et al.,  
411 2009; Collins & Barber, 2005; Kaye et al., 2015; O'Rourke et al., 2013). For instance, studies

412 have shown that parents can increase their children's anxiety in sport through their directive  
413 behaviours and pressure (Bois et al., 2009), the motivational climate that they create (Kaye et al.,  
414 2015), or their expectations and beliefs for their children's success in sport (Collins & Barber,  
415 2005). In contrast, there is far more limited evidence pertaining to how parents may help to  
416 reduce athletes' anxiety (e.g., Ullrich-French & Smith, 2006). The emphasis within literature on  
417 parents as contributors to, rather than protectors against, anxiety, may act to reinforce the  
418 stigmatisation of parental involvement in sport and subsequently coaches and organisations  
419 desires to exclude parents of their work. Consequently, the finding that parental responsiveness  
420 may lower a component of cognitive sport anxiety is important not only to provide some balance  
421 to the currently available literature, but also to further demonstrate the complexity of sport  
422 parenting, encouraging us to look beyond the overly simplistic dichotomy of pressure and  
423 support resulting in good and bad outcomes (cf., Knight, Berrow, et al., 2017).

424 Overall, the results of this study clearly indicate that when young male rugby players  
425 perceive their parents' support as responsive, they experience positive psychosocial outcomes.  
426 A unique result from the present study is that both the pattern and magnitude of association  
427 between perceived mother's and father's responsiveness and players' psychosocial outcomes  
428 were similar. This is interesting because, research to date has provided variable evidence  
429 regarding the relative influence of mothers versus fathers in sport, with moderated or low  
430 concordance between parents' reported behaviours and children's perceptions of their mothers'  
431 and fathers' behaviours (Babkes & Weiss, 1999; Dorsch et al., 2016) and differences between  
432 mother's and father's behaviours and athletes outcomes (Lienhart et al., 2019). The similarities  
433 in the results of the present study between mothers and fathers may be because, in contrast to

434 other studies which have focused on sport specific behaviours of parents, responsiveness is a  
435 general construct and thus assessing athletes' perceptions of a more general parenting behaviour.

436 It should be noted that the players involved in the study had a mean age around 16 years,  
437 and were in the investment stage of their sport development (i.e., athletes' being committed to  
438 achieving an elite level of performance in a single sport) (Côté, 1999; Côté & Hay, 2002).

439 Research on parental influences in youth sport often considers that parental influences decreases  
440 in importance in the investment stage of athletes' development with coach and peer influence  
441 increasing (e.g., Côté & Hay, 2002; Wylleman & Lavallee, 2004). However, the present study  
442 reinforces the continuing influence of parents, through their responsive support, even when  
443 athletes are situated within the investment stage of sport participation.

444 **Applied implications.** The findings of the present study offer valuable information and  
445 applied implications for parents, coaches, and sport organisations. The results demonstrate that  
446 players' positive perceptions of parental responsiveness lead to positive psychosocial outcomes  
447 in sport. As such, we would suggest that such findings could extend previous parent  
448 education/support programmes (e.g., Dorsch et al., 2017; Thrower et al., 2016, 2017) by  
449 highlighting the importance of not simply providing parents with information regarding, for  
450 instance, the types of sport specific behaviours or involvement that are appropriate or useful  
451 from parents, but rather to consider the broader interactions that occur between a parent and their  
452 child. Specifically, we would suggest that providing parents with suggestions and strategies to  
453 engage in regular communication with their child to learn about their specific needs and desires,  
454 as well as their likes, dislikes and elements core to themselves, would be particularly useful. For  
455 a parent to demonstrate responsiveness they need to know their individual child, recognising that  
456 they will be constantly changing as they grow and thus, rather than being presented with a set of

457 behaviours to demonstrate, learning how to engage with their child so that they understand their  
458 child and subsequently demonstrate this understanding while also validating and caring for their  
459 child is key.

460       **Limitations and future directions.** The current findings should be considered within the  
461 context and limitations of the study. Involving young male rugby with a mean aged of 16 years  
462 in the UK, the specific features of the sport context, the limited age range of participants, and the  
463 fact that the study only involved male participants may have influenced some of the relationships  
464 identified between responsiveness and certain psychosocial outcomes. Further research should  
465 consider involving more diverse participants to ensure the generalisability of the findings; for  
466 instance, by including various sports, male and female participants, varying age groups, and  
467 participants from varying levels of sport. Additional research would also be beneficial among  
468 single-parent families, various socio-economic background, and in different cultural contexts.

469       Further, despite collecting data and demonstrating group invariance on two independent  
470 datasets, this study was cross-sectional and did not consider the long-term effects of perceived  
471 mother/father responsiveness on athletes' psychosocial outcomes. Long-term influences of  
472 responsive support on individuals are expected because individuals that are responsive in certain  
473 specific situations are also deemed to be responsive more generally, leading to long-term distal  
474 outcomes (Feeney & Collins, 2015; Selcuk et al., 2016; Tomlinson et al., 2016). Thus, further  
475 research should consider the uses of a longitudinal design to examine this pathway for young  
476 athletes. The cross-sectional design of the present study could also have led to participants' with  
477 higher levels of thriving rating their parental responsiveness more positively. Such limitation  
478 requires further investigation.

479           Additionally, the investigation of the combined, versus unique, influence of mother and  
480 father responsiveness may also require further investigation. This is because the results of the  
481 present study showed that both the pattern and magnitude of association between perceived  
482 mother's and father's responsiveness were similar (e.g., perceived responsiveness negatively  
483 related with worry while mediated by participants' self-esteem), but the analyses were conducted  
484 on distinct models for perceived mother and father responsiveness rather than one model  
485 accounting for their joint influence. Eventually, it should be recognised that athletes' perceptions  
486 of their parents' responsiveness do not necessarily relates with actual responsive behaviours from  
487 their parents. Nonetheless, a previous study showed that despite not being necessarily related, the  
488 provision and perception of parents' responsiveness both contributed to athletes self-perceptions  
489 and thriving. (Rouquette et al., 2021).

490           **Conclusion.** The purpose of the current study was to examine the association between  
491 adolescent rugby players' perceptions of their mother's and father's responsiveness with thriving  
492 (i.e., positive affect, vitality, and life satisfaction) and the worry component of cognitive trait  
493 anxiety, mediated by their self-esteem. The results showed that, among two independent datasets,  
494 players' perceptions of their mother's and father's responsiveness were positively related to  
495 thriving (i.e., positive affect, vitality, and life satisfaction), and negatively related to their worry  
496 before or while competing. The association between players' perception of their mother's and  
497 father's responsiveness with thriving and the worry component of trait cognitive anxiety was  
498 mediated by participants' self-esteem. Overall, the study uniquely contributes to the  
499 understanding of parent-athlete relationships by demonstrating the positive outcomes associated  
500 with young male elite rugby players' perceptions of their mother's and father's responsiveness.

501

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761

**Table 1**

*Dataset 1 and 2 - Correlation table with confidence intervals, variable means, and standard deviations of the continuous variables*

Variable	Dataset 1		Dataset 2		1	2	3	4	5	6	7	8
	M	SD	M	SD								
1. Father Responsiveness	5.73	1.18	5.79	1.14		.61** [.50, .70]	.25** [.10, .39]	.00 [-.15, .16]	.39** [.26, .52]	.35** [.21, .48]	.31** [.17, .44]	.45** [.32, .57]
2. Mother Responsiveness	5.87	1.11	5.87	1.10	.64** [.56, .70]		.39** [.25, .51]	-.07 [-.23, .08]	.43** [.29, .55]	.46** [.33, .57]	.32** [.18, .45]	.51** [.38, .61]
3. Self Esteem	3.89	0.57	3.88	0.60	.30** [.19, .41]	.37** [.26, .47]		-.24** [-.38, -.09]	.57** [.46, .67]	.49** [.37, .60]	.35** [.20, .47]	.60** [.50, .69]
4. Cognitive Trait Sport Anxiety	2.39	0.81	2.46	0.83	-.03 [-.15, .09]	-.12* [-.24, -.00]	-.28** [-.38, -.16]		-.08 [-.23, .08]	-.09 [-.24, .07]	-.15 [-.30, .00]	-.13 [-.28, .03]
5. Life Satisfaction	7.72	1.58	7.57	1.66	.36** [.26, .46]	.39** [.28, .49]	.51** [.41, .59]	-.15* [-.26, -.03]		.41** [.27, .52]	.50** [.38, .61]	.82** [.76, .86]
6. Positive Affect	3.61	0.70	3.68	0.71	.37** [.26, .47]	.42** [.32, .52]	.44** [.34, .53]	-.15* [-.27, -.04]	.43** [.32, .52]		.49** [.37, .60]	.77** [.70, .83]
7. Vitality	3.42	0.69	3.44	0.71	.33** [.22, .44]	.31** [.20, .41]	.36** [.25, .46]	-.21** [-.33, -.10]	.50** [.40, .58]	.53** [.44, .61]		.82** [.76, .86]
8. Thriving	3.63	0.59	3.63	0.61	.44** [.34, .53]	.47** [.37, .56]	.55** [.47, .63]	-.21** [-.33, -.10]	.81** [.77, .85]	.80** [.75, .84]	.82** [.78, .86]	

*Note.* *M* and *SD* are used to represent mean and standard deviation, respectively. Correlation below the diagonal correspond to dataset 1. Correlations above the diagonal line correspond to dataset 2. Values in square brackets indicate the 95% confidence interval for each correlation. \* indicates  $p < .05$ . \*\* indicates  $p < .01$ .

**Table 2**

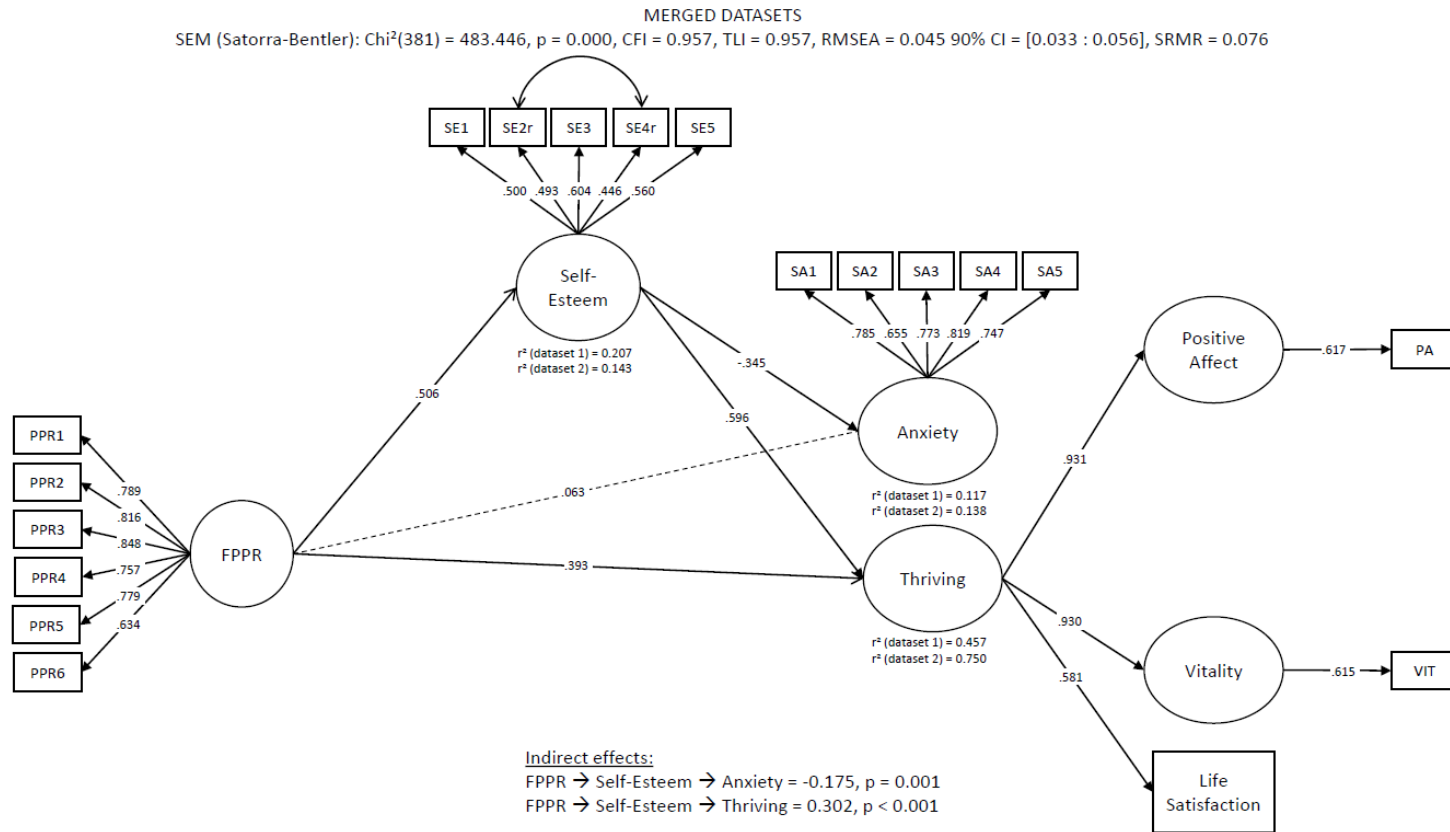
*Table reporting tests of measurement invariance between the freely estimated model and the fully constrained models accounting for configural metric, scalar, and residual invariance.*

<b>Model comparison</b>	<b><math>\Delta\chi^2</math> (<math>\Delta df</math>)</b>	<b>p-value</b>	<b><math>\Delta CFI</math></b>	<b><math>\Delta TLI</math></b>	<b><math>\Delta RMSEA</math></b>	<b><math>\Delta SRMR</math></b>
Perceived Father Responsiveness	37,985 (59)	0,984	0,011	0,021	0,011	0,014
Perceived Mother Responsiveness	31,698 (59)	0,998	0,015	0,019	0,018	0,011

*Note. N = 312, dataset 1 n = 122, dataset 2 n = 190*

**Figure 1**

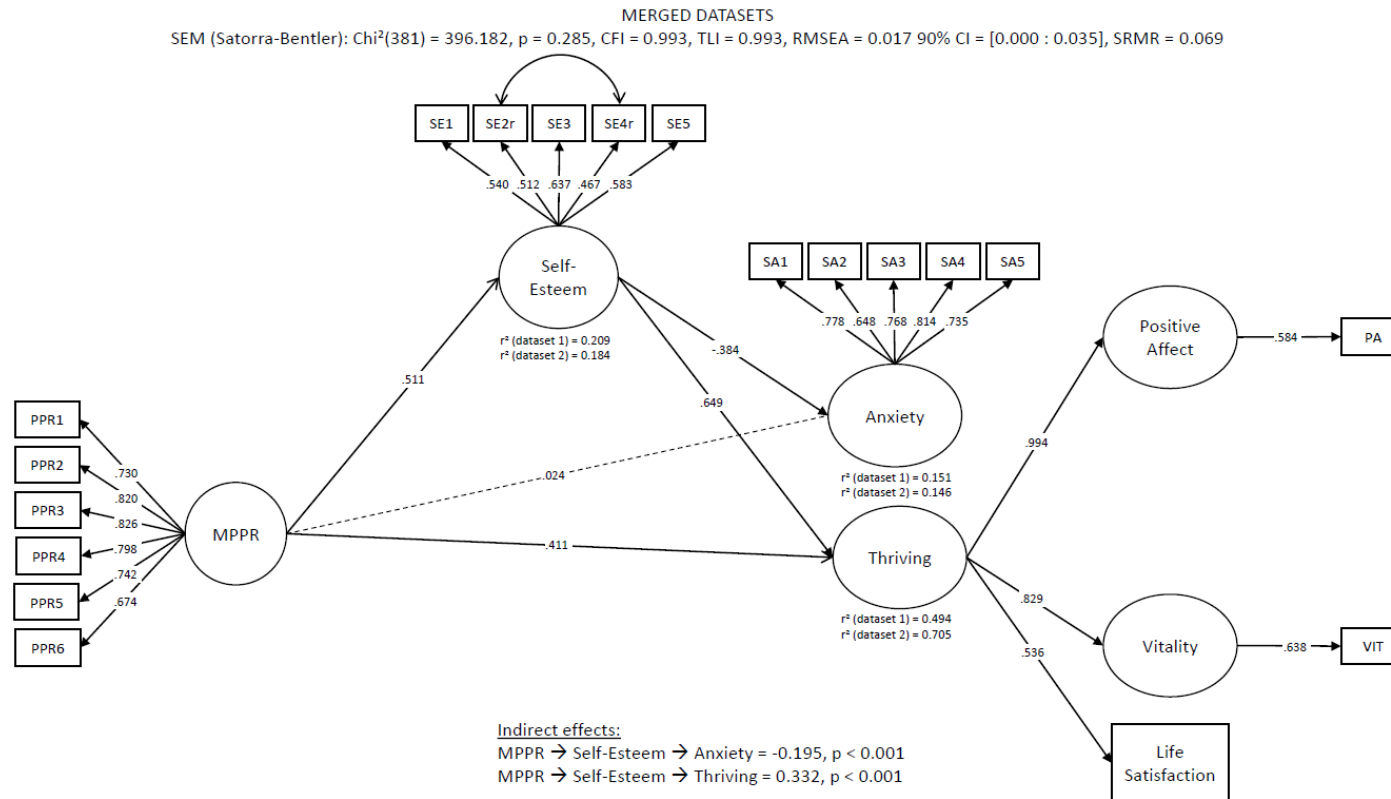
*Structural Equation Model of Perceived Father Responsiveness*



*Note.* This structural equation model shows the relationships between athletes’ perceived father responsiveness and their cognitive trait sport anxiety and thriving while mediated by their self-esteem. Statistics are standardized regression coefficients. Dotted lines represent nonsignificant relations; bold lines represent significant indirect path with  $p < 0.05$ . FPPR = Perceived Father Responsiveness, Anxiety = Cognitive Trait Sport Anxiety

**Figure 2**

*Structural Equation Model of Perceived Mother Responsiveness*



*Note.* This structural equation model shows the relationships between athletes’ perceived mother responsiveness and their cognitive trait sport anxiety and thriving while mediated by their self-esteem. Statistics are standardized regression coefficients. Dotted lines represent nonsignificant relations; bold lines represent significant indirect path with  $p < 0.05$ . FPPR = Perceived Father Responsiveness, Anxiety = Cognitive Trait Sport Anxiety