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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**

10 Olivier Y. Rouquette ^{a,b,*}, Camilla J. Knight ^b, Victoria E. Lovett ^c, Donald Barrell ^d, and
11 Jean-Philippe Heuzé^a

12 ^a *Laboratoire Sport et Environment Social (SENS), Université Grenoble Alpes, Grenoble,*
13 *France;* ^b *School of Sport and Exercise Sciences, Swansea University, Swansea, United*
14 *Kingdom,* ^c *Department of Psychology, Swansea University,* ^d *Rugby Football Union, Rugby*
15 *House, Twickenham Stadium, United Kingdom*

16

17 Corresponding author:

18 Olivier Y. Rouquette

19 Swansea University Bay Campus

20 Engineering East

21 Crymlyn Burrows

22 Swansea

23

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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 (ω_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: χ^2
317 (38) = 51.79, $p = 0.067$, CFI = 0.97, TLI = 0.95, RMSEA = 0.06, SRMR = 0.06, and second
318 dataset ; χ^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 ± 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.

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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

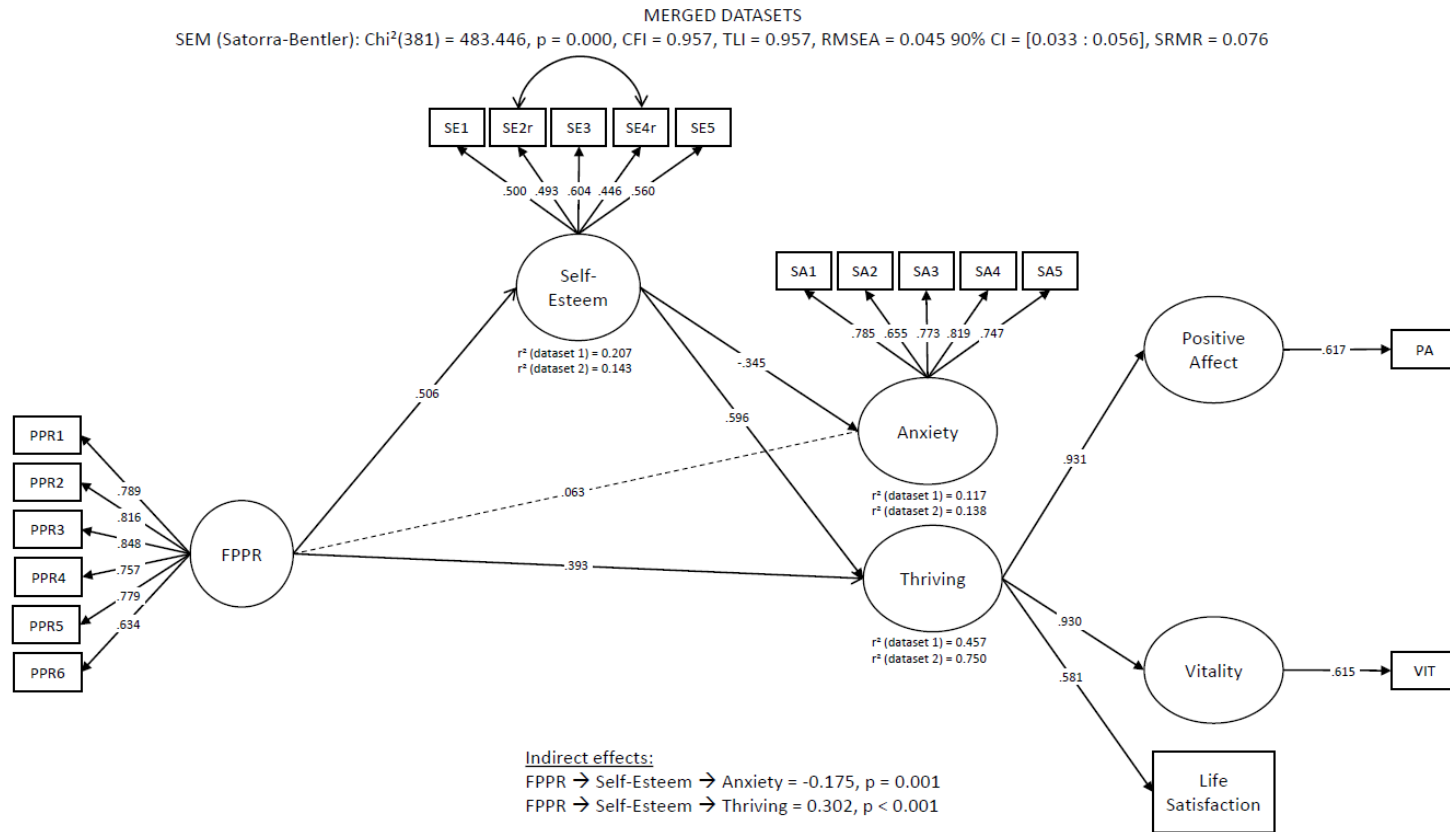
Table reporting tests of measurement invariance between the freely estimated model and the fully constrained models accounting for configural metric, scalar, and residual invariance.

Model comparison	$\Delta\chi^2$ (Δdf)	p-value	ΔCFI	ΔTLI	$\Delta RMSEA$	$\Delta SRMR$
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

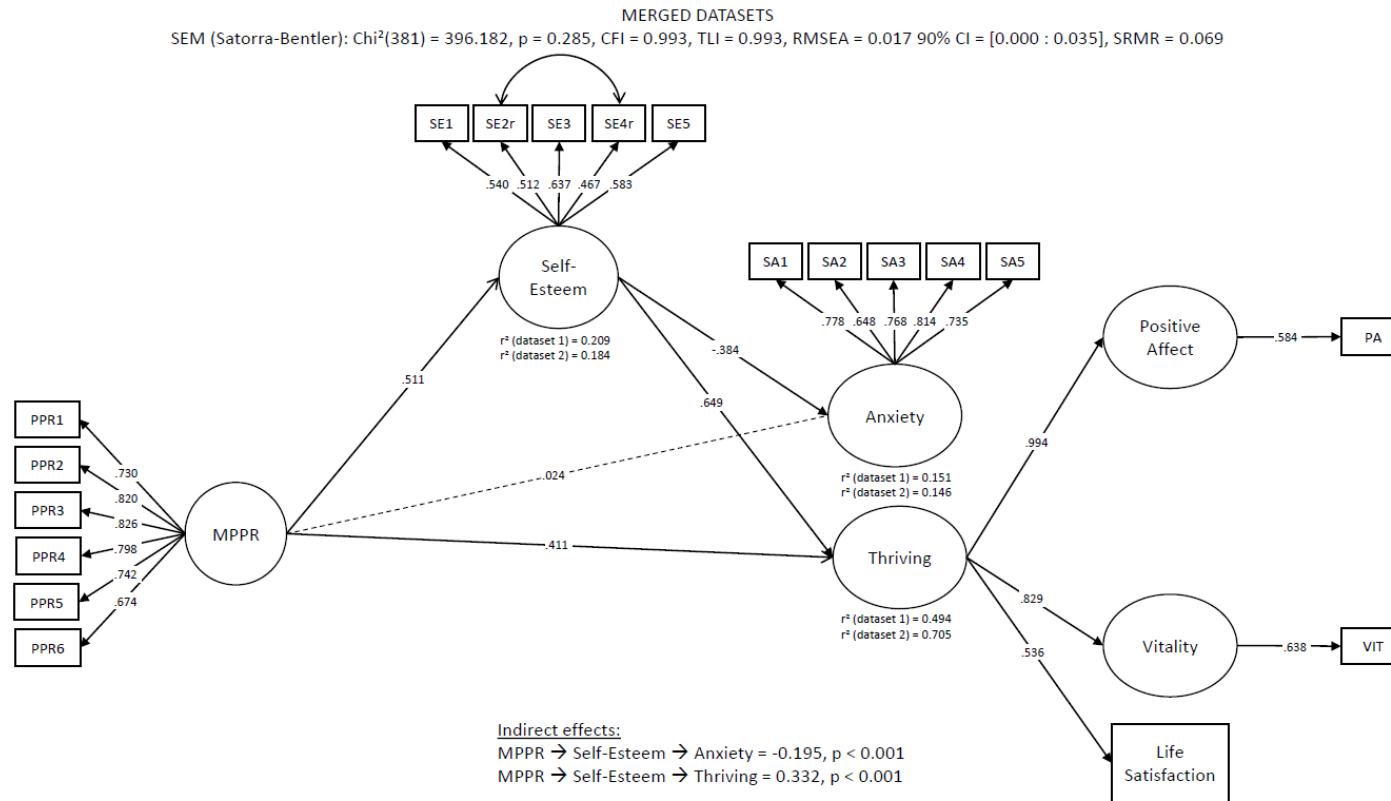
Structural Equation Model of Perceived Father Responsiveness



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