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This is the Accepted version of the following publication

O'Connor, Donna, Gardner, Lauren, Larkin, Paul, Pope, Alun and Williams, A Mark (2019) Positive youth development and gender differences in high performance sport. Journal of Sports Sciences. ISSN 0264-0414

The publisher's official version can be found at
<https://www.tandfonline.com/doi/full/10.1080/02640414.2019.1698001>
Note that access to this version may require subscription.

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Positive youth development and gender differences in high performance sport

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Submitted to *Journal of Sports Sciences*

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Abstract

We examined positive youth development within a high performance sport environment. Youth football players (N = 455; Males = 315; Females = 140) completed a range of questionnaires including: the Youth Experiences Survey for Sport; Self-Confidence subscale of the Competitive State Anxiety Inventory–2 Revised; Sport Competence Inventory; Prosocial and Antisocial Behaviour in Sport Scale; and the modified Coach-Athlete Relationship questionnaire. The players reported a relatively high level of self-confidence, competence and positive youth experiences. They felt a strong coach-athlete relationship and displayed higher levels of prosocial than antisocial behaviour. Males scored significantly higher than females on self-confidence, perceived self-competence, antisocial behaviour to teammates and opponents, relationship with their coach, and cognitive skills. Findings suggest a relationship between high performance sport environments and positive youth development.

Key words: football; adolescence; youth sport; gender; coach; positive youth development.

1 **Introduction**

2 Positive youth development (PYD) is a strengths-based perspective focused on
3 building upon naturally occurring skills and potential to aid healthy development and
4 adaptive functioning (Lerner et al., 2005). The approach aims to develop individuals who
5 are healthy, engaged, and productive members of society, both in youth and later
6 adulthood (Hamilton, Hamilton, & Pittman, 2004). Youth sport has been identified as a
7 valuable vehicle for PYD (Fraser-Thomas, Côté, & Deakin, 2005; Holt & Neely, 2011);
8 however, researchers have tended to focus on the school or recreational sport setting (Holt
9 et al., 2016), with little known about PYD within high performance sports environments
10 (Santos et al., 2018).

11 High performance youth sport is typically focused on talent development and
12 identification, with many players specialising in football at an early age (Harwood &
13 Johnston, 2016; Read, Oliver, De Ste Croix, Myer, & Lloyd, 2016; Santos, Corte-Real,
14 Regueiras, Dias, Martinek & Fonseca, 2018). In addition, it is characterised by high
15 pressure environments where the focus is on successful results often at the expense of
16 holistic development (Harwood & Johnston, 2016; Sagar, Busch, & Jowett, 2010).
17 Individuals within high performance youth sport environments are often faced with
18 intrapersonal and interpersonal challenges (e.g., the fear of failure, deselection, and
19 pressures from coaches, parents and peers) which may not be conducive to psychosocial
20 development (Harwood & Johnston, 2016; Reeves, Nicholls, & McKenna, 2009). For
21 example, highly competitive sports environments have been linked with antisocial
22 behaviours, low self-esteem, stress, burnout, injuries, and dropout among youth
23 participants (Baker, Copley, & Fraser-Thomas, 2009; Fraser-Thomas et al., 2005;
24 Harwood & Johnston, 2016; Merkel, 2013). Since no more than a third of individuals
25 participating in high performance youth sport progress to professional adult competitions

(Barreiros, Côté, & Fonseca, 2014), there is a need to better understand the high performance youth sport environment and its relationship with PYD.

Scientists have used two prominent measures to examine PYD in the youth sports context: the 4Cs framework (Côté, Bruner, Erickson, Strachan, & Fraser-Thomas, 2010; Little, 1993); and the Youth Experiences Survey for Sport (YES-S; MacDonald, Côté, Eys, & Deakin, 2012). Although both methods aim to assess the same construct, the 4Cs model focuses on outcomes related to PYD (i.e., competence, confidence, connection, and character), whereas the YES-S focuses on positive and negative developmental experiences (MacDonald & McIsaac, 2016). It may be valuable to incorporate both frameworks into a broad conceptualization of PYD to gain a better understanding of its role in high performance youth sport. Within the 4Cs framework, competence refers to perceptions of athletic ability (e.g., technical skills, tactical skills, and physical skills) (Vierimaa, Erickson, Côté, & Gilbert, 2012). Confidence is defined as an individual's overall belief in their ability to be successful in sport (Vealey, 1986; Vierimaa et al., 2012). Connection refers to the positive social interactions and relationships formed within the sports context, such as those with coaches and peers (Vierimaa et al., 2012). Finally, character relates to the moral development and sportspersonship acquired by engaging in prosocial behaviours while avoiding antisocial behaviours in sport (Bredemeier & Shields, 1996; Vierimaa et al., 2012).

Although there is limited research exploring the 4Cs model within youth sport, the adaptive function of each individual construct has been well supported in school and recreational sports contexts. For example, higher competence and confidence have been linked with greater intrinsic motivation, effort, and persistence (Feltz, 1988; Weiss & Ebbeck, 1996). These outcomes may be particularly important in high performance youth sport where individuals are likely to face challenges and setbacks, such as competition

for a position and occasional poor performances (Harwood & Johnston, 2016). In regards to connection, positive relationships with coaches and peers support self-esteem enhancement and the development of personal and social skills (Santos et al., 2018; Vella, Oades, & Crowe, 2013; Weiss & Smith, 1996), whereas developing character through prosocial sporting behaviours relates to a broader respect for societal rules (Côté et al., 2010).

Published reports suggest there may be gender differences associated with the 4Cs as males have tended to report higher competence, confidence, and report more antisocial behaviours than females (Horn & Harris, 2002; Kavussanu & Boardley, 2009; Lirgg, 1991). Within the sporting context, it is believed the gender differences may be due to perceiving sport as being more masculine or more feminine, with the difference becoming greater on masculine-type tasks (e.g., football as opposed to ballet) (Lirgg, 1991; Clifton & Gill, 1994). In comparison, within a school context, females have been shown to have higher levels of positive youth development compared to males (Årdal, Holsen, Diseth, & Larsen, 2018; Conway, Heary, & Hogan, 2015). While there are inconsistent findings related to the influence of gender on positive youth development, an exploration of these constructs within a unified model may enable a better understanding of PYD among male and female youth sports participants, particularly within the relatively unexplored realm of high performance youth sport.

The YES-S (MacDonald et al., 2012) assesses positive developmental experiences in sport across four domains (i.e., personal and social skills, cognitive skills, goal setting, and initiative), as well as negative developmental experiences in sport. Previous research in school and recreational sport settings has linked sports participation with positive developmental experiences in each of the aforementioned domains (Camiré, Trudel, & Forneris, 2009; Dworkin, Larson, & Hansen, 2003; Petitpas, Van Raalte, Cornelius, &

Presbrey, 2004). These positive developmental experiences have in turn been linked with other outcomes such as improved academic performance, higher self-esteem, and improved psychological well-being (Cronin & Allen, 2015; Humphrey et al., 2011). However, there is evidence of negative developmental experiences in this context, including negative peer relationships, increased stress and anxiety, aggression, and use of drugs and alcohol (Dworkin et al., 2003; Peretti-Watel, Beck, & Legleye, 2002; Shields & Bredemeier, 2001).

According to Hansen, Larson, and Dworkin (2003), the competitive aspect of sport may play a critical role in producing both positive and negative developmental experiences. This notion was supported by Wilkes and Côté (2010) who found females scored higher on a range of positive developmental experiences than females in a competitive basketball programme. The experiences were based on the non-sport specific Youth Experiences Survey 2.0 (YES; Hansen & Larson, 2005), and included identity reflection, time management, emotional regulation, cognitive skills, diverse peer relationships, pro-social norms, and links to work and college. Players in the competitive program also reported higher levels of stress compared to those in the recreational programme. Furthermore, Wilkes and Côté (2010) focused their study on female sports participants based on the argument that developmental experiences in sport differ between males and females (e.g., females report lower levels of win orientation, competitiveness, competence, and feel they receive less recognition for their achievements than their male counterparts). Although researchers utilising the sport-specific version of the YES (YES-S) have reported no gender differences (Sullivan, LaForge-MacKenzie, & Marini, 2015), the sample included only recreational sports participants. With the numerous challenges players face in high-pressured youth sporting environments (e.g. focus on winning, pressures from coaches and parents) this may not

be conducive to their psychosocial development (Baker et al., 2009; Fraser-Thomas et al., 2005; Harwood & Johnston, 2016; Reeves et al., 2009). As such there is a need to investigate the positive and negative developmental experiences of both males and females within the highly competitive environment of high performance youth sport.

In the present research, we explore PYD within a high performance youth sport environment by measuring both athlete outcomes and experiences utilising the 4Cs framework and the YES-S. It is hypothesised there will be an inter-relationship between the athlete experiences and outcomes with athletes who score high on the 4Cs also scoring high on the YES-S. In addition to providing novel information on PYD in a high performance youth sport setting, we examine whether differences exist between males and females competing at this level. It is hypothesised the 4Cs and developmental experiences will differ between the sexes, with males reporting greater competence, confidence, and positive developmental experiences than females, and females reporting less antisocial behaviours than males.

Method

Participants

A power calculation (G*Power version 3.1; Faul, Erdfelder, Lang, & Buchner, 2007) with power = 0.80 and $\alpha = 0.05$, indicated a minimum sample size of 128 (N = 64 per group) would be sufficient to detect a medium effect size (0.50). Participants included youth football players (N = 455; Males = 315; Females = 140) competing in the 2016 National Premier League Division 1 competition (Males: 14.60 ± 1.39 yrs; Females: 14.96 ± 1.67 yrs). The National Premier League Division 1 is the highest level of competition for youth football players in Australia. Participation in this level of competition is seen as a progression to elite senior performance. On average, teams trained three times per week

and competed in one game on the weekend. In total, 29 teams were represented in the sample. Written parental consent was received for all players and ethical approval was granted by the lead institution's Human Ethics Research Committee.

Measures

The *Youth Experiences Survey for Sport* (YES-S; MacDonald et al., 2012) was used to measure positive developmental experiences. The YES-S uses a four-point Likert scale (i.e., 1= not at all; 4 = yes definitely) to reflect the players experiences during the season. The survey consists of 37 items that form five subscales: Personal and Social Skills (14 statements; e.g., "I became better at taking feedback"); Cognitive Skills (5 statements; e.g., "improved creative skills"); Goal Setting (4 statements; "Learned to find ways to reach my goals"); Initiative (4 statements; e.g., "Learned to push myself"); and Negative Experiences (10 statements; e.g., "Adult leaders scared me"). Items representing negative experiences were reverse scored. Higher scores indicate better experiences. High internal consistency reliability ($\alpha > .82$) has been reported for all subscales (MacDonald et al., 2012). For the current study, the internal consistency was within the acceptable range for all subscales ($\alpha = .79 - .86$).

The *Self-Confidence subscale of the Competitive State Anxiety Inventory – 2 Revised* (Cox, Martens & Russell, 2003) was used to assess players' self-confidence in sport. The self-confidence subscale contained five items (e.g., "I'm confident of coming through under pressure"), which players rated from one (not at all), to four (very much so) about how they generally feel. Higher scores indicated greater self-confidence. For the current study, Cronbach's alpha was .83.

The *Sport Competence Inventory* (Vierimaa et al., 2012) was used to measure how competent players were in technical, tactical, and physical skills. The player and their

coach confidentially completed three questions rating the player's competence from 1 (Not at all competent) to 5 (Extremely competent). The triangulation of all available competence ratings provides a reliable and accurate measure of an athlete's sport competence (Causgrove Dunn, Dunn & Bayduza, 2007; Vierimaa et al., 2012).

The *Prosocial and Antisocial Behaviour in Sport Scale* (PABSS; Kavussanu & Broadley, 2009) was used to assess character. The 20 item questionnaire consists of four subscales: Prosocial behaviour toward teammates (4 items; e.g., "I encouraged a teammate"); Prosocial behaviour towards opponents (3 items; e.g., "helped an injured opponent"; Antisocial behaviour towards teammates (5 items; e.g., "criticised a teammate"; and Antisocial behaviour towards opponents (8 items; e.g., "tried to wind up an opponent") which players rate from 1 (never) to 5 (very often) on how often they had engaged in that behaviour. Reliability analyses of the subscales in the current study, were within the acceptable range ($\alpha = .75 - .86$).

The *modified Coach-Athlete Relationship questionnaire* (CART-Q; Jowett & Ntoumanis, 2004) was employed to measure the player's perceived quality of connection with their coach. This questionnaire is composed of three subscales, namely closeness (4 items; e.g., "I trust my coach"), commitment (3 items; e.g., "I believe that my sport career is promising with my coach"), and complementarity (4 items; e.g., "When I am coached by my coach, I am ready to do my best") with each statement rated on a seven-point Likert scale (1 = strongly disagree to 7 = strongly agree). An overall measure is reported by combining the three subscale scores (Lafreniere et al., 2011). High levels of validity and reliability have been reported (Jowett & Ntoumanis, 2004). For the current study, the subscales show good internal consistency ($\alpha = .77 - .78$), as does the overall coach-athlete relationship scale ($\alpha = .91$).

Procedure

Participants completed the questionnaires at a time conveniently scheduled around their team training in the last few weeks of the season. Participants were asked to respond to the questions in relation to their current team and were reminded their responses would be confidential. All completed questionnaires were returned directly to a research assistant involved with the study. The questionnaires took approximately 15-20 minutes to complete.

Data analysis

Following the completion of the questionnaires, data were entered into a Microsoft excel spreadsheet, and then transferred to Statistical Package for the Social Sciences (SPSS) version 20 for statistical analysis. Overall, competence was computed as the mean score for player and coach competence ratings. To calculate an overall character score, a mean score for antisocial behaviour was subtracted from a mean score for prosocial behaviour. CARTQ was computed as the sum of all responses from the coach-athlete relationship questionnaire. To calculate overall YES-S scores, the negative experiences subscale was reverse scored so higher scores reflected more positive developmental experiences. As the values on all PYD data were significantly non-normal, the non-parametric Mann-Whitney U tests were conducted. Robust Loess regression analysis confirmed the scores for each PYD variable was not dependent on age. A significant alpha was set at 0.05, with effect sizes (r) denoted by a small ($r = 0.1 - 0.29$), medium ($r = 0.3 - 0.49$) or large effect ($r = 0.5 - 1$) (Cohen, 1992). Finally, independent t-test comparisons were then conducted for each PYD subscale or total score to compare against scores reported in other non-elite youth sport contexts. Mean comparison results, standard deviations, 95% CI and effect sizes were reported.

Results

Players reported a relatively high level of self-confidence ($M = 3.39$ $SD = 0.53$), competence (3.92 on a 5-point scale), and positive youth experiences ($M = 121.9$, $SD=12.88$). However, mean scores for the YES-S subscales revealed players perceived they were learning less about cognitive skills compared to personal and social skills, goal setting, and initiative. Findings reveal the players felt a strong coach-athlete relationship with their coach (5.94 on the 7-point scale) and displayed higher levels of prosocial when compared with antisocial behaviour (3.63 v 1.66).

The descriptive statistics (means, standard deviations) for boys and girls are presented in Table 1. Separate Mann-Whitney analyses showed that boys recorded significantly higher scores than girls on self-confidence, perceived self-competence, antisocial behaviour to teammates and opponents, relationship with their coach, and cognitive skills. Girls reported a significantly higher score than boys for prosocial behaviour towards opponents.

<Insert Table 1 here >

A comparison of this study's findings (within a high-performance environment) to relevant findings reported in the literature from a school or non-elite sport environment are presented in Table 2. As indicated in the table, athletes in the current study reported higher scores for coach-athlete relationships, prosocial behaviour towards opponents, positive youth experiences and lower antisocial behaviour compared to athletes in school and non-elite sport settings.

< Insert Table 2 here >

A canonical correlation analysis (Koch, 2014, Lattin, Green & Carroll, 2003) was conducted for the variables listed in Table 3, divided as shown into YES-S subscales and Predictor variables (4Cs: confidence, competence, character and connection). Age was considered as a predictor but found to add no value, so this factor was omitted from the analysis.

< Insert Table 3 here >

The most important canonical variate is shown in Table 3. This variate explained 12% of the variance, according to the redundancy criterion R_d of Lattin et al (2003), with an R-squared of 0.31. Wilks' Λ statistic = 0.66; Bartlett's V chi-squared test ($V = 126.9$, degrees of freedom = 25) is significant at all reasonable levels ($p < 0.001$). Sequential tests using Bartlett's V indicated the further canonical variates were not worth considering.

It is clear from the loadings the YES-S components of the first variate are highly correlated with the total of the YES-S scores, while for the predictors, all of the correlations are positive except for Female, which has no effect. This finding suggests those who score highly on all the YES -S variables are quite likely to score highly on all the 4Cs, gender being irrelevant. The canonical correlation was 0.56.

Discussion

Participation in high performance youth sport is often associated with negative outcomes, with limited focus on the potential benefits. In the current paper, we examined PYD among males and females in high performance youth sport. Using the 4Cs framework and the YES-S to examine outcomes associated with PYD and positive and negative developmental experiences respectively, the findings provide evidence of PYD within the high performance youth sport context. Furthermore, the findings demonstrate

a strong correlation between components of the YES-S and the 4C's variables. In line with expectations, males had higher perceptions of confidence and reported more antisocial behaviour towards teammates and opponents. Females reported more prosocial behaviour towards opponents. Males had higher self-perceptions of competence than females; however, this effect was not evident when coach ratings of competence were included. In addition, as hypothesised, males had a significantly stronger connection with their coach, compared to females. Finally, although there were no differences in overall positive and negative developmental experiences, males reported greater cognitive developmental experiences than females. Findings suggest that as reported in less competitive sport settings, high performance youth sport can facilitate the development of positive outcomes and experiences relevant to both sport and non-sport settings.

Players reported moderately high levels of self-confidence in sport that could transfer to other areas of life. While caution is needed in inferring causality from our findings, given that the players may have had high levels of self-confidence prior to entering the high-performance setting, the data align with previous published reports that suggest the development of confidence through sport can lead to improved general self-worth. This increased self-worth has been associated with greater persistence despite setbacks, which may be beneficial for social and academic development (Eime, Young, Harvey, Charity & Payne, 2013). In future, researchers should consider collecting such data using a longitudinal approach, or at least the collection of baseline data prior to entering high-performance environments.

The finding that males reported greater levels of confidence than females is consistent with previous research within physical activity contexts (Lirgg, 1991). Lirgg (1991) proposed gender-differences in confidence may be due to perceiving the sport as being more masculine or more feminine, with the difference becoming greater on

masculine-type tasks (e.g., football as opposed to ballet). Although this notion has been supported in subsequent research (e.g., Clifton & Gill, 1994), a recent study of American soccer players (Munroe-Chandler, Hall, & Fishburne, 2008) found no gender-differences in confidence levels. This latter finding may reflect a change from traditional perceptions of masculine and feminine sports. However, it is plausible that despite the continuing development and rising popularity of football among females within Australia, the sport is still considered a more masculine-type activity. Alternatively, Lirgg (1991) highlighted the possibility of males tending to overestimate their performances, whereas females may underestimate their performances leading to differences in confidence ratings.

Similarly, players in the present study reported moderately high levels of self-competence, with males reporting higher levels than females. Although this gender-difference is consistent with previous research (Horn & Harris, 2002), there was no significant difference when coach-competence ratings were included in the analysis. This finding lends support to Lirgg's (1991) aforementioned notion of gender-differences in self-ratings, and Vierimaa and colleagues' (2012) inclusion of multiple competence ratings within the 4Cs measurement framework to improve accuracy. The total competence scores provide evidence of competence development within the high performance youth sport environment which has been linked with greater enjoyment and continued participation in previous sport research (Crane & Temple, 2014; McCarthy, Jones, & Clark-Carter, 2008). Furthermore, physical perceptions of competence have been shown to lead to positive development in other areas, such as peer relationships (Weiss & Duncan, 1992).

Players reported a strong connection with their coaches. When compared to data gathered in the school and recreational sport settings (Riley & Smith, 2011; Santos et al., 2018; Vella et al., 2013), players in the present study reported higher quality coach-athlete

relationships. This finding may reflect the greater amount of time spent with coaches in high performance youth sport allowing for the development of a stronger connection. Additionally, there tends to be greater commitment from both the player and the coach in high performance settings, leading to a more stable coach-athlete relationship (Lyle, 2002). While all players reported stronger connections than previously reported, it should be noted the male players reported a significantly stronger athlete-coach connection compared to the female players. This is a novel finding and may be due to the male participants having a longer season (i.e., 10 months) and more sessions per week with their coach (i.e., 3 training sessions; 1 game) compared to the females who have a shorter season (i.e., 6 months) and less sessions per week with their coach (i.e., two training sessions; 1 game). As a result, the male players may develop a stronger connection with their coach as they spend greater time with them over the course of the year.

As the results indicate, players in high performance environments have stronger connections with their coach. It is therefore important that coaches are aware of their influence on players, and taught how to promote the transfer of skills into other areas of life. Conroy and Coatsworth (2006, 2007) demonstrated the value of PYD training for coaches as enhancing knowledge and increasing the frequency of certain behaviours which led to positive developmental experiences. For example, coaches should foster opportunities for initiative development, treat players respectfully and maturely, provide choices and rationale for decisions, model respectful behaviour towards others (e.g., parents, officials, younger coaches), emphasise the importance of discipline and progress in sport and non-sport settings (e.g., school), and assist short- and long-term goal setting (Camiré, Forneris, Trudel, & Bernard, 2011; Gould, Collins, Lauer, & Chung, 2007). Gould et al. (2007) reported that coaches who were recognised for their abilities to teach

life skills were highly successful, opposing the notion that PYD and winning cannot be achieved together.

In regards to character, females reported greater overall scores compared to males. The finding that males reported more antisocial behaviour towards teammates and opponents is consistent with past research (Kavussanu & Boardley, 2009); however, these levels were relatively low compared to research in the school setting (Bruner, Boardley, & Côté, 2014). This finding is in contrast to the prevailing view that competitive environments promote antisocial behaviour (Kohn, 1986). Additionally, although males reported less prosocial behaviour towards opponents than females, levels among the sample remained relatively high compared to high school sport athletes (Bruner et al., 2014). The present character scores may reflect the increasing focus of high performance clubs on discipline, sportpersonship, and building a strong club culture. Coaches who develop good relationships with their players, model appropriate moral behaviours towards others, and set clear expectations and standards for player behaviours will reduce antisocial behaviour and promote the development of character among players (Gould et al., 2007; Rutten et al., 2007).

In this paper, we report one of the first attempts to examine the potential development of positive youth experiences within a high-performance sport context. This is demonstrated by the players in the current study reporting relatively higher levels of positive developmental experiences when compared to previous research in youth sport contexts (MacDonald, Côté, Eys, & Deakin, 2011; Vella et al., 2013). Previous findings have indicated school and recreational sports settings may provide appropriate environments to develop positive youth development due to the focus being on fun, engagement, and creativity (MacDonald et al., 2012). However, the results of the current study suggest it is possible for the growth of positive youth development within a high

performance youth football environment, where the focus may be more on talent development and winning, rather than individual's social development. Coaches working in high-performance settings may be able to create environments (or team culture) which foster positive youth development. For example, autonomy-supportive coach behaviours (e.g., considering the players' perspectives, providing rationale for activities, and allowing players to make decisions) have been linked with the development of personal and social skills (Cronin & Allen, 2015). As evidenced by the relatively high levels of personal and social skills, it may be possible that despite a degree of competition between teammates, the high performance team environment creates opportunities for positive personal learning experiences relating to compromise, being patient of others, and uniting in the pursuit of success (Taylor & Bruner, 2012). Furthermore, the social situation may create opportunities for players to learn how to make new friends, regulate their emotions in front of others, and process feedback from others such as the coach and teammates (MacDonald et al., 2012). By engaging within the team environment, players may learn how to apply these skills to other challenges outside of the sport setting to ensure they are responsible adults.

In addition to the higher levels of personal and social development, the current results indicate players in the high performance environment reported moderately higher levels of goal setting and initiative compared to previous research in school and recreational team environments (MacDonald et al., 2011; Vella et al., 2013). As the participants in the current study were players within a high-performance talent development programme, it is possible the players have set specific goals within their sporting domain. Furthermore, the higher levels of initiative demonstrate the players may be intrinsically motivated by the sport, and thus to achieve a high-performance pathway, have invested a substantial amount of time and effort within the sport (Russell, 2014;

Vink, Raudsepp, & Kais, 2015). This finding would support practice history research which has found elite youth players invest more time engaged in activities associated with the specific sport (i.e., team training; individual training) compared to less skilled players (Ford, Ward, Hodges, & Williams, 2009; Roca, Williams, & Ford, 2012; Ward, Hodges, Starkes, & Williams, 2007). Therefore, it would suggest the high performance training environment may create challenges and goals for players to achieve, which then have a positive influence on the work ethic and focus of the player.

In accordance with other sport-based positive youth development research, the findings from the current study demonstrated low values for both the cognitive skills and negative experiences sub-scales (Cronin & Allen, 2015; MacDonald et al., 2011; Vella et al., 2013). In relation to the cognitive skills sub-scales, researchers believe the relatively lower scores may be reflective of the lack of sport-specific questions (Cronin & Allen, 2015). As the questions relate more to improving academic cognitive skills (i.e., finding information and improving computer skills), some players may not make the link between these and sport-specific cognitive skills. While some of the participants would record information in their training diary, engage in wellness recording via apps, and use computers to watch game footage, it is possible the players do not make the link between these activities and football related cognitive skills. As such, the low scores for cognitive skills in this and other research may demonstrate the need for further modification of the YES-S instrument with questions which relate to more sport-specific activities or examples of cognitive skills. However, it should be noted that the male players did report greater cognitive scores than the females. This finding supports other sport-based gender research, where female players are reported to perform lower than male counterparts on physical fitness (Mujika, Santisteban, Impellizzeri, & Castagna, 2009) and match performance measures (Bradley, Dellal, Mohr, Castellano, & Wilkie, 2014). In addition

to the low cognitive skill scores, the results indicated relatively low scores for negative experiences. This finding corroborates with previous sports-based investigations which also found lower scores for negative experiences (MacDonald et al., 2011; Vella et al., 2013). The low scores associated with negative experiences may suggest that within the high performance environment players feel supported by the coach and their peers and thus have positive experiences within this environment.

While this study provides evidence of positive youth development in high-performance football, there were several methodological limitations. A potential limitation was due to the time constraints under which the coaches worked, we were unable to conduct a peer measure of player competence, the coach version of the CART-Q or the peer connection inventory. In future, researchers should consider including these instruments to gain a more holistic and objective measurement of PYD. It has been recognized that relying on self-report ratings of youth behavior alone may be problematic (Frick & Kamphaus, 2001). In the current study, this was evidenced by higher perceptions of competence in males compared with females, whereas coach ratings of competence did not significantly differ between the two groups. Therefore, combining multiple perspectives may provide a more accurate indication of PYD. However, the inclusion of both PYD frameworks and measurement of outcomes related to PYD along with positive and negative developmental experiences strengthened the research.

Conclusion

Youth sport has been identified as a valuable vehicle for PYD (Fraser-Thomas, Côté, & Deakin, 2005; Holt & Neely, 2011), however, high performance youth sport is typically focused on talent development and identification and characterised by high pressure environments where the focus is on successful results often at the expense of holistic development (Harwood & Johnston, 2016; Sagar, Busch, & Jowett, 2010). As

such, individuals within these environments are often faced with intra and interpersonal challenges (e.g., the fear of failure, pressures from coaches, parents and peers) which may not promote psychosocial development (Harwood & Johnston, 2016; Reeves, Nicholls, & McKenna, 2009). Our findings provide evidence of PYD within the high-performance youth sport context, with this environment able to facilitate the development of positive outcomes and experiences relevant to both sport and non-sport settings. The results suggest that high performance coaches may be able to create environments (or a team culture) which foster positive youth development. However, there may still be scope to educate coaches better in regards to the potential influence they have on players, and how they can promote the transfer of psychological skills into other areas of life.

Conflicts of interest: none

Funding

This work was supported by the Australian Research Council (ARC) and industry partner Football Federation Australia under the Grant LP120100243.

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643 Table 1: Mean (\pm SD) of 4Cs and PYD

		Total		Boys		Girls		z	p	r	
		M	SD	M	SD	M	SD				
Confidence	Confidence	3.39	0.53	3.49	0.50	3.15	0.52	-6.817	.000	0.32	medium
Competence	Player Competence	3.92	0.56	3.98	0.56	3.78	0.53	-3.522	.000	.17	small
	Coach Competence	3.26	0.69	3.25	0.71	3.27	0.65	-0.058	.954	.00	small
	Overall Competence	3.55	0.49	3.56	0.53	3.53	0.41	-1.348	.178	.07	small
Character	Prosocial Team	4.14	0.63	4.12	0.65	4.19	0.60	-1.047	.295	.05	small
	Prosocial Opponent	3.13	1.02	2.99	1.03	3.44	0.93	-4.187	.000	.20	small
	Antisocial Team	1.59	0.54	1.69	0.58	1.37	0.35	-5.904	.000	.28	small
	Antisocial Opponent	1.74	0.69	1.88	0.74	1.42	0.45	-7.233	.000	.34	medium
	Overall Character	1.97	0.92	1.77	0.94	2.42	0.71	-6.947	.000	.33	medium
Connection	Closeness	6.22	0.94	6.24	1.01	6.19	0.77	-2.072	.038	.10	small
	Commitment	5.63	1.09	5.67	1.14	5.52	0.98	-2.292	.022	.11	small
	Complementarity	5.98	0.89	6.03	0.90	5.87	0.87	-2.201	.028	.10	small
	CARTQ	65.81	9.49	66.32	9.75	64.66	8.80	-2.482	.013	.12	small
YES-S	Personal and Social Skills	3.23	0.49	3.23	0.49	3.24	0.49	-0.157	.875	.01	small
	Cognitive Skills	2.43	0.79	2.52	0.80	2.23	0.73	-3.469	.001	.16	small
	Goal setting	3.38	0.60	3.39	0.62	3.35	0.55	-1.264	.206	.06	small
	Initiative	3.65	0.45	3.66	0.45	3.63	0.46	-0.569	.569	.03	small
	Negative Experiences	1.40	0.60	1.42	0.63	1.36	0.54	-0.027	.978	.00	small
	Overall YES	121.90	12.88	122.28	13.09	121.04	12.40	-1.059	.290	.05	small

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POSITIVE YOUTH DEVELOPMENT

Table 2: High performance PYD analysis comparison with non-elite and school sport settings (Bruner et al., 204; MacDonald et al., 2011; Riley & Smith, 2013; Vella et al., 2013).

Authors	context	sample size	instrument	Previous research		High performance		Mean Difference	Adjusted p value	95%CI for difference	Cohen's d
				M	SD	M	SD				
Vella et al. (2013)	Non-elite community	455	CART-Q total	60.56	14.19	65.81	9.49	5.25	<.001	3.44 – 7.06	0.43
Riley & Smith (2013)	school	208	CART-Q total	62.81	12.43	65.81	9.49	3	.003	1.01 – 4.98	0.28
Bruner et al. (2014)	school	329	Prosocial team	4.08	0.66	4.14	0.63	0.06	0.32	-0.06 – 0.18	0.09
			Prosocial opponent	2.56	0.99	3.13	1.02	0.57	<.001	0.38 – 0.76	0.57
			Antisocial Team	2.12	0.8	1.59	0.54	-0.53	<.001	-0.65 – -0.41	-0.80
			Antisocial Opponent	2.38	0.87	1.74	0.69	-0.64	<.001	-0.78 – -0.50	-0.83
Vella et al (2013)	Non-elite community	455	YES overall	112.72	12.61	121.9	12.88	9.18	<.001	7.03 – 11.33	0.72
MacDonald et al (2011)	school and non-elite community	510	Personal & social skills	2.98	0.63	3.23	0.49	0.25	<.001	0.16 – 0.34	0.44
			Cognitive skills	2.26	0.87	2.43	0.79	0.17	.02	0.03 – 0.31	0.20
			Goal setting	3.06	0.69	3.38	0.6	0.32	<.001	0.21 – 0.43	0.49
			Initiative	3.47	0.56	3.65	0.45	0.18	<.001	0.10 – 0.26	0.35
			Negative experiences	1.71	0.79	1.4	0.6	-0.31	<.001	-0.43 – -0.19	-0.44

Adjusted p-value: the test has been modified to take into account there is a grouping effect due to team

648 Table 3: Loadings of individual variables included in the canonical correlation analysis
649 of YES and the 4 Cs.

		Loading
YES	Personal	0.77
	Cognitive	0.44
	Goals	0.69
	Initiative	0.56
	Negative Experiences	0.58
Predictors	Confidence	0.67
	Competence	0.37
	Character	0.75
	CARTQ	0.57
	Female	0.01

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