Examining the psychological characteristics of developing excellence profiles of male English youth soccer players: Differences across ages and performance levels

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ABSTRACT

The aim of this study was to investigate differences in PCDEs across different age groups (U13, U14, U15, U16 and youth team (YT)) and categories of participation (Categories 1, 2 and 3 at academy level, and grassroots (GR)) in male English youth soccer players (n = 375). Data was gathered using the PCDE questionnaire version 2 (PCDEQ2). Differences between age groups and categories of participation were analysed using the Kruskal-Wallis H test. Across age groups, highest differences were reported in perfectionistic tendencies (d = .57, p = <0.01) and adverse response to failure (d = .49, p = <0.01), with youth team players reporting the highest scores. Across categories of participation highest differences in PCDEs were observed in perfectionistic tendencies (d = .64, p = <0.01), self-directed control and management (d = .63, p = <0.01) and adverse response to failure (d = .58, p = <0.01), with Category 1 players reporting the highest scores. YT and Category 1 players also demonstrated the highest scores in use of imagery and active preparation (IAP), with Category 1 players also demonstrating the highest and lowest score on use of active coping strategies and presentation of clinical indicators, respectively. The findings of the current study have important implications for key stakeholders involved in the planning and monitoring of a players talent development environment. Careful consideration should be given to identifying and developing players' psychological characteristics to ensure positive nurturing throughout their journey.

Introduction

In soccer, talent identification and development systems (TIDS) exist to produce elite players (Bergkamp et al., 2019). The ultimate aim of these systems is to select and then develop players who will, in the future, outperform those players who are either not selected for academy programmes or de-selected somewhere along the pathway (Larkin & Reeves, 2018). Traditional talent development models, however, have often been criticised due to adopting an overly narrow focus on individual elements of performance rather than adopting a more holistic approach (Collins et al., 2018; Gulbin et al., 2013; Till & Baker, 2020).

In 2012 the Elite Player Performance Plan (EPPP) was introduced by the English Premier League with the intention of increasing the number of home-grown soccer players in the English league's top four divisions by adopting "a holistic multi-disciplinary approach to talent development" (Jones, 2018, p.307), facilitated through increased contact time and specialist coaching (Premier League, 2011). The EPPP is structured across three phases: (1) Foundation (U9 to U11), (2) Youth Development (U12 to U16) and (3) Professional Development (U17 to U23) with each academy awarded a Category status from 1 to 4, with Category 1 being the "most elite" and receiving the most funding (Premier League, 2011). As part of the EPPP all academy players should receive a holistic multi-disciplinary learning programme that supports technical, tactical, physical, mental, lifestyle and welfare development (Premier League, 2011).

Within the EPPP, and indeed any other talent development system, psychosocial skills are of particular importance for players to develop the necessary skills required to meet the challenges and emotions experienced on the talent development journey (Gledhill et al., 2017; Larkin & Reeves, 2018; MacNamara & Collins, 2010a, 2010b). Many of these challenges come through transitions that can be classified as normative (e.g., move to next phase of EPPP) or non-normative (e.g., injury or de-selection) events that a player needs to navigate during their talent development journey (Wylleman & Lavallee, 2004; Wylleman et al., 2013). However, it is important to note that players on the EPPP also have non-athletic transitions, such as those that exist within their micro- (e.g., educational studies, home) and macro-environments (e.g., youth and national culture) that may help to fulfil and facilitate

their holistic whole person development (Stambulova et al, 2021; Wylleman et al., 2013). Since only a very small amount (~5%) of boys will go on to play professional soccer, psychosocial skills should be considered particularly important for all EPPP academy soccer players (Roe & Parker, 2016) and will become increasingly important if players are released (Rongen et al., 2018). To date, however, much of the emphasis has been on measuring player physical, technical and tactical attributes (Koopman et al., 2020), whilst somewhat neglecting the measurement of player psychosocial skills.

In their article titled "challenges and [possible] solutions to optimizing talent identification and development in sport" Till and Baker (2020) emphasised the importance of developing psychosocial characteristics within younger age groups where these characteristics may not yet have emerged and may therefore be critical to future success. Indeed, future career success in adult professional soccer players has been associated with psychosocial qualities that these players demonstrated whilst they were adolescent youth players, such as, commitment to their goals, engaging in problem-focused coping behaviours, and seeking out social support (van Yperen, 2009). Ryom et al. (2020) also highlighted in their case study of KRC Gent's academy in Belgium the importance of psychosocial skills on the talent development pathway. The authors described a feature of "positive youth development environments" (p.8) as developing the whole person across psychological, psychosocial and academic or vocational levels within that player's unique context. Also, player autonomy and seeking peer support (rather than autocratic coaching) were encouraged with positive effects noted on later development. Similarly, Larsen and colleagues' (2020) case study with Ajax Amsterdam's academy (synonymous with youth development for many years) found that a long-term, developmental environment was more effective than a more short-term 'win at all costs' approach. Additionally, like Ryom et al. (2020) the support from coaches, parents and schools was vital to developing players' psychosocial skills. However, it should be noted that cultural differences may exist between English academies and their European counterparts, highlighting the importance of investigations into the psychosocial characteristics of English youth academy soccer players.

Such previous research highlights the importance of gaining a greater understanding of the key psychological characteristics that may provide the foundations for players to optimise their technical,

tactical and physical development, in addition to enhancing life skills outside of soccer. MacNamara & Collins (2010a, 2010b) explored the development pathway of both elite and successful developmental athletes and identified a number of psychological characteristics of developing excellence (PCDEs) that would be required by young athletes to help negotiate the challenges and transitions of a talent development environment. MacNamara and Collins (2011) later devised a PCDE questionnaire (PCDEQ) to assess six overarching PCDE factors: 1) support for long-term success, 2) imagery use, 3) coping with pressure, 4) organising and engaging in quality practice, 5) evaluating performances and 6) working on weaknesses and support from others. However, the original PCDEQ was limited by not accounting for maladaptive and dual-effects of PCDEs and not being validated with adolescent athletes. Consequently, this led to a second version of the PCDEQ (PCDEQ2) being developed by Hill and colleagues in 2019 to address these shortfalls. The PCDEQ2 comprises seven PCDE factors, including: (1) Adverse response to failure (maladaptive responses to failure including items related to anxiety, depression, focus and perfectionism), (2) Imagery and active preparation (ability to use visualisation for skill refinement and management of arousal), (3) Self-directed control and management (intrinsic willingness to engage without constant supervision), (4) Perfectionistic tendencies (perfectionism and associated maladaptive facets such as anxiety, fear of failure and obsessive passion), (5) Seeking and using social support (seeking help from appropriate stakeholders such as parents and coaches), (6) Active coping (proactive self-regulated deployment of coping strategies) and (7) Clinical indicators (mental health and associated factors such as anxiety, depression, eating disorders, and changes in behaviour).

The PCDEQ2 has been advocated over other assessment tools such as grit (Duckworth et al., 2007), growth mindset (Dweck, 2017) and resilience (Fletcher & Sarkar, 2016), which are often oversimplified and only partially address some of the many complex psychosocial challenges faced on the talent development journey (Collins et al., 2018; Laureys et al., 2021; Taylor et al., 2022). Due to the comprehensive nature of the PCDEQ2, a notable advantage is its ability to differentiate between athletes across various PCDE's, which can subsequently be used to identify PCDEs that require development. Indeed, Hill et al. (2019) discovered that adverse response to failure, self-directed control

and management, seeking and using social support and clinical indicators discriminated between those athletes deemed by coaches to have a low and high likelihood of developing to the elite level.

Despite these previous findings and the potential importance of the PCDEs, very little research has explored PCDE profiles in academy soccer players (Kelly et al., 2018; Saward et al., 2019). Contrary to Hill et al. (2019), Kelly et al. (2018) did not find any association between PCDEs, and low and high performers as measured by the original version of the questionnaire (PCDEQ). However, it is important to note that Kelly et al. (2018) examined current performance rather than potential development and may therefore have missed important psychosocial skills that were gestating within the players, to potentially emerge at a later point. Additionally, this research was conducted on a case study basis that explored PCDEQ profiles within a single Category 3 academy and therefore did not allow for any comparison between other categories of participation. Saward et al. (2019) also used the first version of the PCDEQ across a 20-month period to examine how PCDEs may be associated with future playing standard. These authors discovered several age-related changes in PCDE factors that may influence career progression and be characteristic of Category 1 and 2 scholars across the U12 to U16 age groups. Importantly, factors that were found to indicate membership of higher category status were the ability to cope with performance and developmental pressures and evaluating performances and working on weaknesses. Interestingly, imagery use (during practice and competition) appeared to decrease with age, whereas coping with performance and developmental pressures appeared to increase. However, similar to Kelly et al. (2018) this study involved players from a single Category (Category 2) from two clubs, further highlighting the importance of investigations across different age groups and performance levels. To the authors' knowledge, however, there still remains no multi-club studies that have investigated PCDEQ2 profiles across age groups and performance levels in male English youth soccer players.

Identifying differences in PCDE factor scores across age groups and levels of participation could provide key stakeholders (e.g., academy managers, coaches) in academy soccer with useful insights into the psychosocial characteristics that may differentiate players at different ages and stages of their development. Additionally, it could help to provide more focus on what PCDE factors to

158 develop at younger ages or at lower categories of participation that seem essential for future success
159 (Taylor & Collins., 2021b). This may also help to reduce the collateral damage of players being
160 incorrectly selected or de-selected (type I or Type II errors, respectively) whilst in a TIDS like the EPPP
161 (Wattie & Baker, 2017) and help to provide youth players with appropriate PCDEs to successfully
162 navigate the challenges and transitions they will inevitably face during their talent development journey.

163 Accordingly, the aim of this study was to examine differences in the seven PCDE factors across
164 age groups and performance levels in male English youth soccer players using the PCDEQ2. A further
165 aim was to examine differences in PCDEs across age groups at each category of participation and vice
166 versa, to determine interaction effects of age and category of participation. It was hypothesised that
167 older players and those at higher levels of participation would have significantly different scores across
168 the seven PCDE factors. The data collected from this study can also supplement existing knowledge
169 around normative PCDE profiles of academy players across different ages and performance levels.

170 **Methods**

171 ***Study design***

172 A cross-sectional research design was used to investigate differences in PCDE profiles across different
173 age groups and performance levels in male English youth academy soccer and grassroot players.

174 ***Participants***

175 Three hundred and seventy-five male English youth soccer players (age: 12 to 18) were purposively
176 sampled from Category 1 to 3 EPPP soccer academies (n = 294) or grassroot (n = 81) performance
177 levels. Table 1 provides the total number, mean age and standard deviation of participants across each
178 age group and performance level. The U17 and U18 age groups were merged into a youth team category
179 comprising academy first- and second-year scholars, which is representative of the academy structure
180 at these age groups. Participants were sampled from one club at Category 1 and 2, two clubs from
181 Category 3 and one club from grassroots. Soccer academies exist as TIDS with the aim of selecting and
182 producing elite players (Bergkamp et al., 2019), whereas grassroots soccer is more about providing

opportunities for amateur players to participate recreationally within community settings (Weissman et al., 2022).

Table 1. Numbers per age group and category

Age Group	Category 1	Category 2	Category 3	Grassroots (GR)	Total
U13	15	17	26	20	79
U14	16	12	33	20	81
U15	31	11	28	21	91
U16	26	4	23	12	65
Youth Team	25	18	9	8	59
Total	113	62	119	81	**375**

Procedure

Ethical approval was granted from the author's institutional ethics committee (approval number BAHSS2 0012), with voluntary informed (for participants over 16) or parental consent (for participants under the age of 16) attained prior to participation. Players were only selected if they fulfilled the inclusion criteria of playing in an age group between under-13 and under-18 on 1st September in that selection year. Participants were informed about the general purpose of the study and told that their identities would be kept strictly confidential and that all the items in the questionnaire should be answered as honestly as possible. Following gate keeper approval PCDEQ2 questionnaires were either e-mailed to prospective participants for completion using the online platform Survey Monkey or were completed under the supervision of the lead researcher following COVID-19 regulations. A major advantage of electronic questionnaire is the greater flexibility allowed to participants, especially as much of this study was conducted during COVID-19 lockdowns. Clear instructions on how to complete

199 the PCDEQ2 were provided to participants in the information sheet, including the importance of
200 completing the questionnaire on their own. All PCDE questionnaires took between 15 to 30 minutes to
201 complete and were obtained from players between October 2019 and April 2020 during the competitive
202 playing period. All PCDE questionnaires took between 15 to 30 minutes to complete and were obtained
203 from players between October 2019 and April 2020 during the competitive playing period.
204

205 ***Psychological characteristics of developing excellence questionnaire version 2 (PCDEQ2)***

206 The PCDEQ2 questionnaire devised by Hill et al. (2019) was used. The PCDEQ2 consists of 88 items,
207 with similarity responses marked on a 6-point Likert scale from 1 ("very unlike me") to 6 ("very like
208 me"). A combination of positively framed (n = 72) and negatively framed (n = 16) items were used in
209 an attempt to minimise response bias (Field, 2018) and acquiescence bias (Horn & Smith, 2019). Table
210 2 highlights the seven PCDEQ2 factors with an example of sample items. The internal consistency of
211 the PCDEQ2 has previously been reported by Hill et al. (2019) as good ($\alpha = 0.88$) with each individual
212 PCDE factor also rated as good ($\alpha = 0.72$-0.91). In the current study the internal consistency of the
213 PCDEQ2 ($\alpha = 0.87$) along with each individual PCDE factor was also rated as good ($\alpha = 0.74$-0.93)
214 (Field, 2015).

215 **Table 2.** Subscales and Sample Items

Factors/subscales	**Sample Items**
Adverse response to failure (ARF - linked to fear of failure) 21 items	"When things are going wrong for me, my future seems uncertain"
Imagery and active preparation (IAP - for managing arousal and practising skilled performance) 15 items	"I include imagery in my preparation"

Self-directed control and management (SDCM - related to self-regulation in development) 14 items	"I often act without thinking through all the alternatives"
Perfectionistic tendencies (PT - including perfectionism, anxiety, fear of failure, obsessive passion, and realistic performance evaluation) 10 items	"The people around me expect me to be perfect at everything I do"
Seeking and using social support (SUSS - use of effective support networks in Talent Development) 9 items	"I often seek advice from different people"
Active coping (AC -proactive deployment of coping mechanisms) 10 items	"When we need to work hard I am first in the queue"
Clinical Indicators (CI - of mental health factors such as anxiety, depression and eating disorders) 9 items	"After eating, I sometimes feel guilty about its effect on my body shape"

Statistical Analysis

Descriptive statistics for all PCDE factors are reported using the median score and interquartile range (IQR). Normality of data for all variables was checked using a Kolmogorov-Smirnov Test and confirmed that non-parametric analysis should be used. Homogeneity of variance was checked with Levene's test and confirmed equal variance across groups. To examine differences in PCDE factors across age groups and performance levels Kruskal-Wallis *H* (non-parametric) test was performed in SPSS (version 27, Chicago, Illinois). When significant main effects were found Dunn's post-hoc analysis was used to determine pairwise comparisons between age groups and performance levels using the Bonferroni adjusted alpha level to reduce chance of a type I error. The level of

significance was set at $p < 0.05$. Cohen's *d* effect size was calculated by transformation of partial eta squared to obtain the magnitude of differences through the effect size calculator for non-parametric tests (www.psychometrica.de/effect_size.html) and interpreted using the scale from Cohen (1998) as: trivial (0-0.2), small (0.2-0.5), moderate (0.5-0.8) and large (>0.8).

Results

Differences in Psychological Characteristics of Developing Excellence between Age Groups

The median scores and IQR for all PCDE factors by age group are presented in table 3. Significant main effects were found between age groups on adverse response to failure (H (4) = 24.21, $p < 0.001$, d = 0.49), imagery and active preparation (H (4) = 21.31, $p < 0.001$, d = 0.48), and perfectionistic tendencies (H (4) = 30.60, $p < 0.001$, d = 0.57) (Table 3). Pairwise comparisons for PCDEs with significant main effects are also presented in table 3.

Table 3. Median values and differences across age groups and psychological characteristics of developing excellence factors

Age groups	**n**	**Psychological characteristics of developing excellence (PCDEs)**						
		ARF	**IAP**	**SDCM**	**PT**	**SUSS**	**AC**	**CI**
U13	79	2.71 [d]	3.60 [d, e]	4.43	3.10 [d, e]	4.44	4.40	2.33
U14	81	2.60 [d, e]	3.83 [e]	4.50	3.20 [d, e]	4.33	4.50	2.22
U15	91	2.79 [e]	3.53 [d, e]	4.64	3.10 [d, e]	4.56	4.50	2.11
U16	65	3.07 [a, b, c]	4.00 [a, c]	4.57	3.55 [a, b, c]	4.06	4.40	2.17
Youth Team (YT)	25	3.33 [a, b, c]	4.20 [a, b, c]	4.43	3.70 [a, b, c]	4.33	4.60	2.33

Age effect	p<0.000	p<0.000	p<0.849	p<0.000	p<0.139	p<0.819	p<0.523
Effect size	0.49	0.48	0.18	0.57	0.18	0.08	0.09
Descriptor	Small	Small	Trivial	Moderate	Trivial	Trivial	Trivial

ARF = Adverse response to failure, IAP = Imagery and active preparation, SDCM = Self-directed control and management, PT = Perfectionistic tendencies, SUSS = Seeking and using social support, AC = Active coping, CI = Clinical Indicators, a = different from U13 with P < 0.05, b = different from U14 with P < 0.05, c = different from U15 with P < 0.05, d = different from U16 with P < 0.05, e = different from YT< 0.05

Differences in psychological characteristics of developing excellence between categories of participation

The median scores and IQR for all PCDE factors by category of participation are presented in table 4. Significant main effects were found between categories of participation on: adverse response to failure *(H* (3) = 31.31, $p < 0.001$, $d = 0.59$), imagery and active preparation (*H* (3) = 11.60, $p = 0.009$, $d = 0.32$), self-directed control and management (*H* (3) = 34.60, $p < 0.001$, $d = 0.63$), perfectionistic tendencies (*H* (3) = 36.49, $p < 0.001$, $d = 0.64$), active coping (*H* (3) = 9.40, $p = 0.024$, $d = 0.27$) and clinical indicators *(H* (3) = 17.43, $p = 0.001$, $d = 0.41$) (Table 4). Pairwise comparisons for PCDEs with significant main effects are also presented in table 4.

Table 4. Median values and differences across categories of participation and psychological characteristics of developing excellence factors

Categories of participation	**n**	**Psychological characteristics of developing excellence (PCDEs)**						
		ARF	**IAP**	**SDCM**	**PT**	**SUSS**	**AC**	**CI**

Category 1	113	3.10 [c]	4.00 [c, d]	4.71 [d]	3.60 [b, c, d]	4.44	4.60 [d]	2.00 [b, d]
Category 2	63	3.00 [c]	3.73	4.43 [d]	3.45 [a, d]	4.33	4.45	2.44 [a]
Category 3	118	2.45 [a, b, c]	3.73 [a]	4.64 [d]	3.10 [a]	4.44	4.50	2.11 [d]
Grassroots	81	2.86 [c]	3.70 [a]	4.00 [a, b, c]	3.00 [a, b]	4.33	4.20 [a]	2.56 [a, c]
Category Effect		p<0.000	p<0.009	p<0.000	p<0.000	p<0.853	p<0.024	p<0.001
Effect Sizes		0.59	0.32	0.63	0.64	0.16	0.27	0.41
Descriptor		Moderate	Small	Moderate	Moderate	Trivial	Small	Small

ARF = Adverse response to failure, IAP = Imagery and active preparation, SDCM = Self-directed control and management, PT = Perfectionistic tendencies, SUSS = Seeking and using social support, AC = Active coping, CI = Clinical Indicators, a = different from category 1 with P < .05, b = different from category 2

Differences in psychological characteristics of developing excellence between age groups within each category of participation.

The median scores and IQR for all PCDE factors for age groups in each category of participation are presented in table 5. Across academy categories, significant main effects were only found between age groups in category 1 players on: imagery and active preparation (H (4) = 25.50, p < 0.001, d = 1.00); self-determined control and management (H (4) = 16.71, p = 0.002, d = 0.73); perfectionistic tendencies (H (4) = 28.46, p < 0.001, d = 1.08); and seeking and using social support (H (4) = 18.72, p < 0.001, d = 0.79) (Table 5). Significant main effects were also found at Grassroots level in imagery and active preparation (H (4) = 20.10, p < 0.001, d = 1.04); self-directed control and management (H (4) = 15.25, p = 0.004, d= 0.83); and active coping (H (4) = 14.08, p = 0.007, d = 0.78) (Table 5). Pairwise comparisons for PCDEs with significant main effects are presented in table 5.

263 **Table 5.** Median (M), inter-quartile range (IQR) and differences in psychological characteristics of

264 developing excellence (PCDE) factors across age groups in each category of participation.

Level of Participation	PCDE Factors	U13		U14		U15		U16		Youth Team		Main Effects		
		M	IQR	*M*	IQR	*M*	IQR	*M*	IQR	*M*	IQR	H (4)	*p*	Cohen's *d*
Cat 1	ARF	3.10	0.98	2.91	1.18	2.81[d]	1.48	3.10	1.04	3.48[b]	0.79	13.41	0.009	0.96 L
	IAP	3.23[b, c,d,e]	1.13	4.53[a]	1.07	3.73[a]	1.53	4.07[a]	1.30	4.33[a]	1.13	25.50	< 0.001*	1.00 L
	SDCM	4.25[c]	0.57	4.79	0.50	4.93[a, d]	0.50	4.36[c]	0.89	4.50	1.32	16.71	0.002*	0.73 M
	PT	3.60	1.10	3.70	1.13	3.20[d, e]	0.70	3.95[c]	1.17	4.10[c]	0.90	28.46	< 0.001*	1.08 L
	SUSS	3.83[c]	1.25	4.50	1.50	4.78[a, d]	0.78	3.78[c]	1.81	4.44	1.17	18.72	< 0.001*	0.79 M
	AC	4.40	0.92	4.75	0.85	4.80[d]	0.90	4.35[c]	1.08	4.70	0.95	13.69	0.008*	0.63 M
	CI	2.22	0.83	1.89	1.08	1.89	0.78	2.06	1.03	2.11	2.89	4.71	0.318	0.16 T

	ARF	2.52	0.98	2.67	1.18	2.95	1.48	2.00	1.04	3.07	0.79	3.30	0.510	0.22S
	IAP	3.53	1.13	3.60	1.07	3.90	1.53	3.87	1.30	3.80	1.13	0.57	0.966	0.51M
	SDCM	4.50	0.57	4.29	0.50	4.64	0.50	4.93	0.89	4.32	1.32	1.38	0.847	0.44S
Cat 2	PT	2.80	1.10	3.65	1.13	3.40	0.70	2.80	1.17	3.50	0.90	5.94	0.203	0.38S
	SUSS	4.56	1.25	4.00	1.50	4.56	0.78	3.83	1.81	4.06	1.17	12.26	0.16	0.82L
	AC	4.40	0.92	4.45	0.85	4.75	0.90	4.40	1.08	4.40	0.95	3.32	0.505	0.22S
	CI	2.33	0.83	2.72	1.08	2.44	0.78	1.44	1.03	2.33	0.72	2.88	0.578	0.28S
	ARF	2.43	1.00	2.14	1.45	2.64	1.48	2.81	1.48	2.62	2.67	5.97	0.201	0.26S
	IAP	3.80	1.47	3.53	1.38	3.73	1.13	3.83	1.70	4.20	0.90	4.69	0.321	0.16T
Cat 3	SDCM	4.36	0.86	4.79	0.63	4.64	0.86	4.79	0.93	4.68	1.66	4.79	0.309	0.17T
	PT	3.40	1.10	2.90	0.98	3.00	1.30	3.30	0.80	3.25	2.25	4.35	0.360	0.11T

	SUSS	4.28	1.11	4.33	1.00	4.50	1.11	4.28	0.72	4.56	1.58	0.61	0.962	0.35S
	AC	4.55	1.40	4.30	1.15	4.35	1.00	4.60	0.80	4.80	1.00	3.33	0.504	0.54M
	CI	2.33	1.11	1.94	1.08	2.11	1.00	2.11	0.94	2.39	2.89	2.42	0.659	0.24S
	ARF	2.52	0.87	2.76	1.04	2.91	0.88	3.76	1.25	2.74	1.62	6.95	0.139	0.40S
	IAP	3.67	0.38	3.73[d]	1.25	3.33[d]	0.73	4.43[b, c]	0.53	4.23	0.87	20.10	<0.001*	1.04L
	SDCM	4.64[c]	1.05	4.00	0.96	3.46[a]	0.86	4.39	1.25	4.21	0.93	15.25	0.004*	0.83L
Grassroots	PT	2.60	0.88	2.95	1.23	3.10	1.15	3.65	1.62	3.05	1.27	6.35	0.174	0.36S
	SUSS	4.56[c]	0.53	4.39	1.00	3.78[a]	0.78	4.17	0.86	4.39	0.53	9.96	0.41	0.58M
	AC	4.40	0.50	4.45[c]	1.02	3.85[b]	0.70	4.15	1.15	4.60	0.63	14.08	0.007*	0.78M
	CI	2.44	1.36	2.39	0.53	2.56	1.50	2.89	1.72	2.94	1.72	1.66	0.798	0.36S

Youth team = U17 and U18 age groups, ARF = Adverse response to failure, IAP = Imagery and active preparation, SDCM = Self-directed control and management, PT = Perfectionistic tendencies, SUSS = Seeking and using social support, AC = Active coping, CI = Clinical Indicators, T = Trivial

effect size, S = small effect size, M = moderate effect size. a = different from U13 with $p < 0.05$, b = different from U14 with $p < 0.05$, c = different from U15 with $p < 0.05$, d = different from U16 with $p < 0.05$, e = different from youth team with $p < 0.05$. *Denotes significant main effect ($p < 0.05$).

Differences in psychological characteristics of developing excellence between categories of participation for each age group.

The median scores and IQR for all PCDE factors for categories of participation in each age group are presented in table 6. Significant main effects were found between categories of participation in the U14s, U15s and youth team (Table 6). In the youth team the only PCDE with a significant main effect between age groups was perfectionistic tendencies (H (4) = 13.70, p = 0.003, d = 0.98. In the U14s significant differences were found in adverse response to failure (H (4) = 16.97, p < 0.001, d = 0.94), and self-directed control and management (H (4) = 18.41, p < 0.001, d = 1.00). In the U15s significant main effects were found in self-directed control and management (H (4) = 30.22, p < 0.001, d = 1.35), seeking and using social support (H (4) = 15.46, p = 0.001, d = 0.82) and active coping (H (4) = 27.87, p < 0.001, d = 1.27). Pairwise comparisons for PCDEs with significant main effects are presented in table 6.

Table 6. Median (M), inter-quartile range (IQR) and differences in psychological characteristics of developing excellence (PCDE) factors across categories of participation in each age group.

Level of Participation	PCDE Factors	Category 1		Category 2		Category 3		Grassroots		Main Effects		
		M	IQR	M	IQR	M	IQR	M	IQR	H (4)	*p*	Cohen's *d*
U13	ARF	3.10 [c]	0.98	2.52	1.75	2.38 [a]	1.00	2.52	0.87	10.03	0.018*	0.64 M

	IAP	3.23 [c]	1.13	3.53	1.03	3.80 [a]	1.47	3.67	0.38	8.54	0.036*	0.56 M
	SDCM	4.25	0.57	4.50	0.93	4.39	0.86	4.64	1.05	2.23	0.527	0.20 S
	PT	3.60 [d]	1.10	2.80	0.85	3.30	1.10	2.60 [a]	0.88	10.87	0.012*	0.69 M
	SUSS	3.83 [b, d]	1.25	4.56 [a]	0.64	4.33	1.11	4.56 [a]	0.53	13.20	0.004*	0.79 M
	AC	4.40	0.92	4.40	0.65	4.60	1.40	4.40	0.55	1.63	0.653	0.27 S
	CI	2.22	0.83	2.33	1.19	2.33	1.11	2.44	1.36	1.09	0.779	0.32 S
U14	ARF	3.05 [c]	1.29	2.67 [c]	1.92	2.14 [a, b, d]	1.02	2.76 [c]	1.10	16.97	<0.001*	0.94 L
	IAP	4.67 [c, d]	1.07	3.60	0.63	3.47 [a]	1.30	3.67 [a]	1.27	14.76	0.002*	0.85 L
	SDCM	4.79 [d]	0.50	4.29	0.52	4.68 [d]	0.57	4.07 [a, c]	0.93	18.41	<0.001*	1.00 L
	PT	3.70 [c]	0.90	3.65	0.68	4.68 [a]	0.95	4.07	1.30	13.18	0.004*	0.78 M
	SUSS	4.44	1.44	4.00	1.86	4.39	1.00	4.44	1.00	1.11	0.776	0.32 S

	AC	4.80	0.80	4.45	0.88	4.30	1.15	4.44	1.00	4.97	0.174	0.32 S
	CI	1.89	1.00	2.72	1.39	1.89	1.17	2.44	0.56	6.10	0.107	0.41 S
U15	ARF	2.81	1.48	2.95	1.00	2.64	1.48	2.95	0.88	2.03	0.567	0.21 S
	IAP	3.73 [d]	1.53	3.90	1.33	3.73	1.13	3.33 [a]	0.73	8.21	0.042 *	0.51 M
	SDCM	4.93 [d]	0.50	4.64	0.64	4.64 [d]	0.86	3.50 [a, c]	0.86	30.22	< 0.001 *	1.35 L
	PT	3.20	0.70	3.40	1.40	3.00	1.30	3.10	1.15	1.52	0.677	0.26 S
	SUSS	4.78 [d]	0.78	4.56	0.67	4.50	1.11	3.78 [a]	0.78	15.46	0.001 *	0.82 L
	AC	4.80 [c, d]	0.90	4.75 [d]	0.50	4.35 [a]	1.00	3.80 [a, b]	0.70	27.87	< 0.001 *	1.27 L
	CI	1.89 [d]	0.78	2.44	0.67	2.11	1.00	2.50 [a]	1.50	7.89	0.48	0.49 S
U16	ARF	3.05	0.98	2.00	0.00	2.83	1.52	3.71	1.33	6.71	0.082	0.51 M
	IAP	4.00	1.17	3.80	0.00	3.73	1.68	4.47	0.60	5.38	0.146	0.40 S

	SDCM	4.36	0.82	4.71	0.00	4.82	0.98	4.21	1.36	8.34	0.039*	0.62 M
	PT	3.90	1.25	2.80	0.00	3.25	0.78	3.80	1.70	7.21	0.065	0.55 M
	SUSS	3.89	1.83	4.00	0.00	4.44	0.72	4.22	0.89	3.04	0.385	0.05 T
	AC	4.30	1.10	4.40	0.00	4.60	0.80	4.10	1.10	4.18	0.243	0.28 S
	CI	2.00	1.06	1.44	0.00	2.11	0.92	2.89	1.00	5.18	0.159	0.39 S
Youth Team (U17-U18)	ARF	3.50	0.82	3.07	0.93	2.48	3.10	2.76	1.67	4.19	0.242	0.30 S
	IAP	4.33	1.17	3.80	0.83	4.00	0.93	4.33	0.33	5.26	0.154	0.41 S
	SDCM	4.46	1.23	4.32	0.79	4.71	1.93	4.29	0.43	1.12	0.773	0.38 S
	PT	4.10[b, d]	0.90	3.50[a]	0.5	3.10	2.70	3.20[a]	1.50	13.70	0.003*	0.98 L
	SUSS	4.39	1.06	4.06	1.11	4.56	1.89	4.44	0.44	3.50	0.321	0.19 T
	AC	4.65	1.03	4.40	1.05	4.90	1.20	4.60	0.70	2.57	0.463	0.18 T

CI	2.11	0.56	2.33	0.78	2.44	1.67	3.22	1.44		5.31	0.151	0.42 S

ARF = Adverse response to failure, IAP = Imagery and active preparation, SDCM = Self-directed control and management, PT = Perfectionistic tendencies, SUSS = Seeking and using social support, AC = Active coping, CI = Clinical Indicators, T = Trivial effect size, S = small effect size, M = moderate effect size. a = different from Category 1 with $p < 0.05$, b = different from Category 2 with $p < 0.05$, c = different from Category 3 with $p < 0.05$, d = different from Grassroots with $p < 0.05$. *Denotes significant main effect ($p < 0.05$).

Discussion

The purpose of this study was to examine differences in the seven PCDE factor scores across age groups and performance levels in male English youth soccer players using the PCDEQ2. A further aim was to examine differences in PCDEs across age groups at each category of participation and vice versa, to determine interaction effects of age and category of participation. It was hypothesised that older players and those at higher levels of participation would have significantly different scores across the seven PCDE factors. The key findings of this study were that (1) in agreement with our hypothesis older players (U16 and youth team) had significantly higher PCDE scores than younger players (U13-U15), but only in adverse response to failure, imagery and active preparation and perfectionistic tendencies, (2) perfectionistic tendencies were significantly higher in Category 1 players than all other levels of participation, with youth team players reporting the highest scores, (3) youth team players also had significantly higher scores in adverse response to failure than younger age groups (U13-U15), with Category 1 players reporting the highest scores, (4) when examining differences across categories of academies the only differences in PCDEs were found in Category 1 players in imagery and active preparation, self-determined control and management, perfectionistic tendencies and seeking and using social support and (5) grassroots players had significantly lower scores in self-directed control and management than all academy players.

Perfectionistic Tendencies

Interestingly, the greatest effect size difference between the older and younger age groups was in perfectionistic tendencies (d = 0.57) with Category 1 youth team players reporting the highest scores. Furthermore, pairwise comparisons showed that Category 1 players had significantly higher scores than all other categories of participation, suggesting that perfectionistic tendencies increased through the age levels and categories of participation. Perfectionism is generally accepted as being multidimensional (Hill et al., 2018), consisting of perfectionistic strivings (adaptive, self-referenced and leading to setting of high standards) and perfectionistic concerns (maladaptive worries over making mistakes and feeling an imbalance between expected and actual performance (Madigan, 2016). Hill et al. (2018) speculated that perfectionism may change with age as individuals develop over their lifespan. Therefore, it is a distinct possibility that the importance of winning and outcome goals in general (e.g., competition for scarce places at the next age group) may increase throughout adolescence, which in turn leads to greater levels of perfectionistic tendencies, as found in the current study. Larkin et al. (2015) discovered that higher perfectionistic strivings in players seemed to facilitate more engagement in types of soccer practice (coach-led, individual practice, peer-led play, and indirect involvement), which ultimately lead to higher levels of performance. Therefore, if players can avoid the negative connotations of perfectionist concerns (such as burnout and dropout – Laureys et al., 2021), this could be a helpful factor in advancing through age groups and reaching and/or staying at higher categories of participation. It could also explain why those athletes that are unable to deal with this in a certain manner may be filtered out of the system as they get older or find their level further down the participation structure (at a lower category of participation) – a form of sporting natural selection. Alternatively, perfectionistic tendencies may be a part of an elite player's make-up and be necessary for them to progress to higher levels. Either way, player support/training on how to avoid the negative consequences of perfectionistic concerns would seem like a vital part of the process for player wellbeing and for reducing the chance of type one (incorrectly selected/retained) or type two errors (incorrectly removed/de-selected) when making decisions on players' futures (i.e., retain or release) (Wattie & Baker, 2017).

Adverse response to failure

Our results illustrated that similar to perfectionistic tendencies, adverse response to failure was also highest in Category 1 players and more prevalent in older players. For example, youth team players had significantly higher scores than the U13-U15 age groups. The close links between perfectionism and fear of failure (Hill et al., 2019) may suggest that an adverse response to failure could be a manifestation of perfectionistic tendencies. This would suggest that as players progress through the system, there is a likelihood of both adverse response to failure and perfectionistic tendencies increasing as they get closer to the professional phase (Noon, 2015). This may also be linked to development of a more exclusive athletic identity (possibly even foreclosure) at higher COP and older age groups. As players get closer to the prospect of a professional contract it may be that they invest even more time and effort into their athletic endeavors at the expense of other elements of their identity. This phenomenon has been examined by Rongen et al (2020) who examined the differences in athletic identity between Category 1 academy players and age-matched soccer playing school pupils. The study found consistently higher athletic identity in those players registered with a Premier League Category 1 soccer club, compared to age-matched soccer-active secondary school playing pupils. Therefore, this reinforces the importance of holistic player development in ensuring players develop as more rounded people regardless of whether they make it to the elite level. Also, an increased chance of adverse response to failure may also coincide with more stressful challenges and important transitions that players experience as they progress across age groups and when involved at higher categories of participation. For example, both Savage at et al. (2017) and Stambulova et al. (2021) identified the junior to senior transition (JST) in sport as being particularly stressful for athletes with increased demands being experienced during this specific time-point of a player's journey (e.g., training intensity and level of competition). It may be the skills that a player brings to the situation that are more important than the situation itself as a learning opportunity (Savage et al., 2022). In accordance with our findings, this highlights the importance of targeted interventions in and around these important transition points, particularly for older players and those involved at higher categories of participation. Our research would support both studies particularly as both ARF and PT showed a linear increase through the age groups (with the exception of the U14s) and in the highest COP (i.e., Category one and two academies), peaking at U16 and youth team level (just before and after the JST has occurred).

It is also interesting to note that higher adverse response to failure scores have previously been suggested to lead to "suboptimal interaction with developmental challenge" (Hill et al., 2019, p.524). Indeed, Hill et al. (2019) found that players rated most likely to progress to the elite level had significantly lower scores in adverse response to failure than players rated less likely to progress. This finding would seem to disagree with the findings of the current study, although, it is important to recognise that although adverse response to failure itself is not thought to have a dual-effect (i.e., both adaptive and maladaptive), a 'fear of failure', on which it is partially based, does. This could possibly mean that higher scores in adverse response to failure (and perfectionistic tendencies) could also lead to, or represent, positive psycho-behavioural characteristics (e.g., quality practice, goal-setting and self-reinforcement, focus and distraction control), in addition to the negative characteristics previously mentioned. For example, Sagar and Stoeber (2009) found that perceived coach pressure predicted a heightened fear of experiencing shame and embarrassment in their participants when experiencing failure, in comparison to less-demanding coaches. However, this enhanced perceived pressure also elicited more positive emotions after success (e.g., happiness, pride, satisfaction), perhaps again illustrating the potential dual-effect nature of a fear of failure and its effect on adverse response to failure mentioned previously. Therefore, fear of failure may not necessarily be a bad characteristic but be indicative of being part of an elite environment where high expectations are the 'norm', especially as it seems to be a more prevalent trait in older and higher category players within the current study. As such coaches need to be made aware of how their coaching behaviors may positively or negatively influence their players and ensure that players have the necessary psycho-behavioural skills required to deal with both the negative and positive effects of fear of failure (and whether this leads to adverse response to failure or not). To do this, Collins and MacNamara (2017, p.341) have advocated a "systematic teaching, challenging, evaluating and refining cycle" that embeds periodised challenge into the pathway. This challenge is designed to test players current psychosocial skills and develop appropriate mental tools to cope with any areas of issue which may include an adverse response to failure caused by a negative response to fear of failure. Indeed, it is not just coaching staff, but all significant others that are vital in this process, including parents and teachers. Stambulova et al. (2021) state that the most successful environments for supporting athletes exist when all the individual constituent parts "(e.g.,

386 school, club coaches, parents) are integrated, and when there is a recognition of the need for coherent
387 messages and optimal support from different stakeholders" (p.539).

388 ***Self-directed Control and Management***

389 An important positive PCDE characteristic that may help facilitate players development and effectively
390 navigate adverse response to failures is self-directed control and management (Toering & Jordet, 2015).
391 It includes elements such as metacognition, grit, and delayed (rather than instant) gratification i.e.,
392 working hard for success in the long-term over the short-term (Toering & Jordet, 2015). Hill et al.
393 (2019) found that players rated more likely to progress to the elite level had higher scores in self-directed
394 control and management than players who were rated less likely to progress to the elite level. These
395 findings agree with the current study that found players who had been selected for an academy had
396 significantly higher scores than grassroots players. Furthermore, in the current study Category 1 players
397 had the highest scores. Collectively, this would suggest that academy players and particularly those
398 performing at the highest level possess higher levels of autonomy (self-regulation and self-control) and
399 focus on planning towards their long-term goals. These psychological characteristics are vital for
400 motivating players towards practice that may often be viewed as tedious and unenjoyable (Hill, 2016).
401 Although Ericsson and colleagues (1993) deliberate practice theory (i.e., an accumulation of thousands
402 of hours of practice is required to achieve expertise in a domain) has largely been debunked, Toering
403 and Jordet (2015, p.344) point out that "the willingness to do just a little more than others each day may
404 to some extent contribute to differences between elite performance levels". In the study by Toering and
405 Jordet (2015) players with higher self-regulation reflected more (also thought to facilitate advancement
406 to higher levels) and tried harder, even under challenging conditions According to the findings of the
407 current study, these traits would seem to be important characteristics representative of players entering
408 EPPP academies with a player's social environment influencing their development (Larsen et al., 2020;
409 Ryom et al., 2020). The case studies by Larsen et al. (2020) and Ryom et al. (2020) both found that
410 "autonomy supportive coaching" (Gledhill et al., 2017, p.17) within a supportive micro-environment
411 (prioritising development over winning) on an individualised basis was indicative of positive cultures.
412 As such, practice design would need to account for coaching behaviours where players are given the

chance to self-regulate, in line with findings from Mills et al. (2014), who interviewed elite soccer academy coaches for their views on optimal development environments. This might include providing practices that are specific, appropriately challenging and more task/mastery-oriented (Collins et al., 2018), thus allowing players to engage more effectively with the programme, whilst also developing the psychosocial skills necessary for success within and extrinsic to the sporting world. In addition to coaches, it is also important to acknowledge the role of parents in facilitating player self-directed control and management. Collins et al. (2016) highlights the importance of parents being supportive, but also allowing their children to make mistakes and have ownership in their development. These authors also highlight that 'pushy' parents are often associated with less elite athletes. For example, those that were labelled as 'super champions' described how their parents "took a back seat, and though interested, were not a significant driver of their development" (Collins et al., 2016, p.7). Therefore, education sessions for significant others (e.g., coaches and parents) may be beneficial in helping to support self-directed control and management and for understanding the advantages of having a more 'hands-off' approach with their players/children.

Imagery and Active Preparation

Imagery and active preparation is another positive PCDE factor that can influence player development and explores how an athlete uses visualisation for motor learning and arousal regulation purposes (Hill et al. 2019). Imagery and other forms of active preparation such as, pre-competition and competition focus plans when used from an early age have been shown to enhance competition preparation, transitions to a different level, coping with injury, and self-evaluation of performance (MacNamara et al., 2010a). In the current study players in older age groups (i.e., U16 and youth team) had significantly higher scores that players in younger age groups (i.e., U13 and U15), with Category 1 players appearing to visualise and actively prepare more than those in lower categories, including grassroots. These findings are in contrast to those of Saward et al. (2019) who found that imagery use (during practice and competition) appeared to decrease with age. When comparing elite and sub-elite athletes there is a link between use of psychological skills and level of performance (Laureys et al., 2021). Additionally, top performers (i.e., Olympic and world champions) use more imagery and at a more demanding level

(i.e., visualised themselves achieving champion status), as opposed to less successful athletes that set their sights lower (Saward et al., 2019). From a perceptual-motor control perspective, Pocock et al., (2017) also discovered the advantages of using imagery for soccer specific tasks i.e., visual exploratory behaviour (or scanning) which may explain differences between anticipation and successful actions in Premier League footballers (Jordet et al., 2013). The implications from this would be that imagery and active preparation should still be encouraged in players from higher categories of participation, but also enhanced in those from lower categories and from an earlier age where time and budgets allow. One possible method may be to deliver workshops to players (and coaches and parents) to explain and encourage use of imagery and active preparation from as young as possible, with regular monitoring of deployment of these skills, possibly as part of a wider PCDE package (Collins et al., 2018).

Active coping and clinical indicators

The PCDE factors of active coping and clinical indicators had small significant differences between categories, but no differences were found between age groups. With regards to active coping the highest score was observed in Category 1 players, however when comparing to other categories no significant differences were noted. These findings are similar to Hill et al (2019) who investigated a smaller sample of elite academy soccer and rugby players aged between 14 to 20 and reported significantly higher active coping and significantly lower clinical indicators in those ranked with the most likely chances of developing to the elite level in their sport. Similarly, our findings would suggest that players across all categories of participation seek to deploy active coping mechanisms, and that this seems to be most prevalent in higher performing Category 1 players. When these testing situations do arise, they are seen as more of a challenge than a threat by 'active copers' (i.e., those in higher categories of participation) who also have more of a tendency to engage in approach rather than avoidance behaviours (Collins et al., 2016).

Education for players into the benefits and workings of being active copers (e.g., Dweck's Mindset approach, 2006) may be useful to improve their progress on the pathway. Hill et al (2016) found similar results in clinical issues (mental health issues such as eating disorders, anxiety and depression) where athletes experiencing these issues tended to use avoidance rather than approach

coping methods. Although there was only a small effect size difference between categories, Category 1 players did have the lowest median score (2.00) which *may* initially suggest that they have less clinical issues than their lower category counterparts. However, Sothern and O'Gorman (2021) found that Category 1 academy soccer players reported having to play through pain and injury due to the fear of de-selection, fueled by perceptions of how parents and coaches would react negatively if they did not compete. Impression management seemed to be an important factor towards these significant others. Indeed, as seen with other factors, the dynamic between players and key stakeholders appeared pivotal in how players attempted to conform to perceived standards. It appears that players became 'actors' in order to portray the behaviours they believed would gain approval from coaches and parents, trying to appear "mentally tough" (Sothern & O'Gorman, 2021, p.8). Part of this facade was to avoid any discussion about their thoughts or feelings for fear of appearing weak. It could be that Category 1 players are simply better at hiding their issues that their lower category counterparts. Lack of awareness or denial of clinical issues could potentially not only derail the talent development process but cause distress to players in their life outside of sport. All athletes could benefit from assessment of clinical issues and appropriate intervention when required (e.g., counselling)), not least to improve their all-round wellbeing if we are to take a holistic and humanistic approach (Wilkinson, 2021). A move away from the culture where players are encouraged to internalise emotions and self-manage their mental wellbeing (Noon et al, 2015) would also be beneficial. Further examination of how the "hyper-masculine" environment (Ong et al., 2018, p.19) affects players across age groups and categories of participation would be a useful step forward.

Seeking and Using Social Support

Finally, seeking and using social support was the only factor which was non-significant across both age groups and categories suggesting players sought similarly low amounts of support from those around them. The results from the current study may suggest that players are reasonably comfortable with seeking support but do not do it all the time (otherwise median scores would be closer to 6). This could be down to reluctance to seek assistance if their 'supporters' are not actually that supportive or alternatively that being more autonomous learners, they are better at solving their own problems. Van

Yperen (2009: 326) found in his study that those players to reach elite level as adults were more adept at dealing with stressful situations "possibly by using their social resources more frequently and more flexibly". The same may be true of the sample used in the current study, although further study with a larger sample is warranted. To reiterate a theme from this paper, educating key stakeholders into how to optimise their supporting behaviours should be an important – if not vital – element of TIDS pathways.

Limitations and Future Research Directions

The current study is the first to examine PCDEs across different ages and categories of participation in male English youth academy soccer players, however a number of limitations should be noted. Firstly, it was not possible to ensure the same number of participants across all age groups and categories of participation. Therefore, some groups had lower sample sizes (e.g., Category 2 U16 and grassroots) that could potentially lead to increased risk of outliers skewing results (Field, 2018). Secondly, although the PCDEQ2 can provide a large set of cross-sectional data across a range of psycho-behavioural characteristics, certain drawbacks are also evident including the risk of self-report bias and perhaps social desirability (Horn & Smith, 2019). Furthermore, the PCDEQ2 is a formative assessment tool, therefore, future research should look to adopt a mixed methods approach with the PCDEQ2 used as part of a larger battery of assessments. For example, interviews with key stakeholders in the talent development environment may well yield some useful insights into their beliefs around how psychosocial factors may be positively developed in a positive manner – exploring both current good practice and areas that can be improved. Additionally, observation of player psycho-social behaviours could be used to either or both support and refute data from the PCDEQ2 to test its ecological validity. Interviews with the players themselves (who should after all be the most important people in the process) could also be useful to explore their beliefs around psychosocial development in talent development pathways (Rongen et al., 2020; Taylor & Collins, 2021a; Willams & MacNamara, 2020).

Finally, a specific drawback of the PCDEQ2 is that it does not distinguish between perfectionistic strivings (seen to be facilitative) and concerns (seen to be potentially debilitative). Stoeber and Janssen (2011) point out that these two elements of perfectionism are highly correlated, but also that there is

still a need to differentiate between them as this affects how stakeholders may interact with players. It could be argued that the healthier *strivings* (associated with positive processes and outcomes including approach behaviors and positive affect) should be encouraged (Sagar & Stoeber, 2009), which presumably would improve a player's longevity within talent development programmes. The more harmful *concerns* should be discouraged, but with the strong link between them it could be easy to mistake one for the other using the PCDEQ2 alone. Without this distinction it is hard for practitioners to decipher whether their actions would be helpful or a hindrance. Given the potential importance of adverse response to failure and perfectionistic tendencies identified in this study, further research is needed to develop an assessment approach that clearly defines what an adverse response to failure is and distinguishes between perfectionistic strivings and concerns.

Conclusion

This study was the first to examine the differences in the seven PCDE factor scores between different age groups and categories of participation in male English youth soccer players using the PCDEQ2. An important finding of the current study, in agreement with our hypothesis, was that older players (U16 and youth team) had significantly higher PCDE scores than younger players (U13-U15) but only in adverse response to failure, imagery and active preparation and perfectionistic tendencies. For perfectionistic tendencies and adverse response to failure the highest scores were found in Category 1 youth team players.

Monitoring of these factors by coaches, parents and other important stakeholders could help facilitate positive psychosocial skills, characteristics and behaviours in players facilitating effective talent development. Other implications are that an adverse response to failure may have a dual-effect on players and may not necessarily be negative. It could, in fact, facilitate deeper reflection that could benefit players' development in the long-term by facilitating more honest self-evaluation. When using the PCDEQ2 practitioners should be aware of the potential 'dual-effect' nature of perfectionism, and therefore carefully distinguish between adaptive (i.e., perfectionistic strivings) and maladaptive (i.e.,

perfectionistic concerns) characteristics, if possible. Key stakeholders (e.g., parents and coaches) should be made aware of their own impact on players' actions and wellbeing through educational workshops delivered by specialists into PCDEs, such as sport psychologists. More could also be done by coaching staff to foster autonomy (self-directed control and management) in players - particularly important at lower categories. This in turn may be helpful in creating the best possible experiences to create rounded human beings – capable of functioning away from soccer – but who *may* also go on to become professional soccer players. A suggestion for further research would be to assess the current state of play in categories to see what is currently done well and what could be improved.

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